

Wind Energy Plan for Dukes County

Scenarios – Draft for Discussion

Prepared by Mark London. Updated: June 8, 2010

To discuss:

- *General approach to laying out the options*
- *Statements of key benefits and detriments of various options*

The aim is not to come to any conclusions at this meeting about which options are best.

This memo outlines the main choices that the community faces when it comes to wind energy development in and around Dukes County. It describes a range of possible approaches both on land and in various offshore areas including state and federal waters. Note the Wind Energy Plan includes options beyond the direct jurisdiction of the people of Dukes County, but over which we could exert influence.

Refer to the map on the next page (to come).

- Land: We could take a more Permissive, Moderate, or more Limited approach to regulations and development, with respect to minimal setbacks from abutters, noise limits, and area restrictions based on significance of resources (with respect to natural, scenic, cultural and other resources). Table 4 illustrates the range of approaches.
- Nomans Commercial Area: There could be development in the Full Extent of the area as identified in the Commonwealth's Ocean Management Plan (OMP), or covering only a Partial Extent in order to increase setbacks from the land.
- Cuttyhunk Commercial Area: There could be development in the Full Extent of the OMP area or a Partial Extent to increase the buffer of the Sow and Pigs Reef and avoid navigation channels.
- Other State Waters: The OMP allows erecting up to 17 community turbines in the state waters of Dukes County.
- Federal Community/Innovative Area: The federal Minerals Management Service (MMS) draft development guidance would reserve the federal waters less than nine miles offshore for community or innovative projects, but no commercial development.
- Federal Commercial Area: The MMS is defining a large area south of Martha's Vineyard and Nantucket for commercial development.

We could proceed with various combinations of these options, or with none of them. Table 1 lists some of the main benefits and detriments associated with each option and gives a rough estimate of how much energy might be produced with each.

Also, we could have different policies with respect to the type of project being proposed. Already, some of the areas are only open to community rather than commercial projects. This principle could be extended to other areas, by either allowing only community projects, or by having different requirement for commercial and community projects.

Table 1: **Scenarios** – Draft for Discussion - June 8, 2010

Location	Current Plans and Regulations	Main Benefits of Location	Main Detriments of Location	Scenario	Energy Capacity (MW)
A Land	<ul style="list-style-type: none"> - Various town regulations - DCPC moratorium in effect in five towns 	<ul style="list-style-type: none"> - Lowest construction cost - Allows individual property owners to generate their energy 	<ul style="list-style-type: none"> - Very considerable potential impacts including noise, vibration, scenic, birds, economic, etc. 	Permissive approach	6
				Limited approach	1
B Nomans Commercial Area	<ul style="list-style-type: none"> - Identified in OMP for up to 100 turbines (commercial or community) - DCPC moratorium in effect 	<ul style="list-style-type: none"> - State and town get royalties 	<ul style="list-style-type: none"> - Considerable scenic impact - Considerable potential impact on birds 	Full extent	350
				Partial extent	175
C Cuttyhunk Commercial Area	<ul style="list-style-type: none"> - Identified in OMP for up to 60 turbines (commercial or community) - DCPC moratorium in effect 	<ul style="list-style-type: none"> - State and town get royalties - Gosnold could get connected to electric grid 	<ul style="list-style-type: none"> - Very considerable scenic impact (Cuttyhunk, Gay Head Overlook) - Considerable potential impact on birds, fishing, and boating 	Full extent	210
				Partial extent	105
D Other State Waters	<ul style="list-style-type: none"> - Identified in OMP for up to 17 turbines (community) - DCPC moratorium in effect 	<ul style="list-style-type: none"> - Town and MVC negotiate community benefits, which include financial 	<ul style="list-style-type: none"> - Considerable scenic impact - Considerable potential impact on birds 		60
E Federal Community Innovative Area	<ul style="list-style-type: none"> - Preliminary MMS identification of area between 3 and 9 miles for community or innovative projects [get exact wording] 	<ul style="list-style-type: none"> - High and steady wind speeds - Limited scenic impact 	<ul style="list-style-type: none"> - Higher construction costs - Highest risk for construction and maintenance 		140
F Federal Commercial Area	<ul style="list-style-type: none"> - Preliminary MMS identification of area beyond 9 miles for commercial development - MMS is preparing a Request for Interest to start the leasing process 	<ul style="list-style-type: none"> - Highest and steadiest wind speeds - Very little scenic impact 	<ul style="list-style-type: none"> - Highest construction costs - Highest risk for construction and maintenance 		3,500

OMP = Ocean Management Plan, December 2009, Commonwealth of Massachusetts

MMS = Minerals Management Service, U.S. Department of the Interior

Energy Potential Capacity – see table 4 for assumptions used for estimates

The list of main benefits and detriments only identify the most significant ones that are useful for differentiating one location from another, and not general benefits or detriments related to wind energy.

Table 2: Estimate of Energy Requirements

	To offset Electricity use	To offset all Energy use
Today	To come	To come
In 2050 – Modest Growth	To come	1279 gigawatts
In 2050 – Full Buildout	To come	1624 gigawatts

The estimates are from the Island Plan. Note: We should try to find a way to express this so that it is comparable with the capacity and production numbers in tables 1 and 3.

Table 3: Estimate of Energy Production Capacity

Note: These are preliminary estimates of the order of magnitude of possible energy production from wind energy development in various locations, as shown in Table 1. These figures represent capacity. Actual production will be between about 20% and 35% of capacity. Sites further offshore should have a greater efficiency due to stronger and steadier wind.

A - Land

Permissive approach	6.0 MW
- 5 turbines of 600 kw (similar to Mass Maritime Academy)	3.0 MW
- 5 turbines of 100 kw (similar to Woods Hole Research Center)	0.5 MW
- 10 turbines of 50 kw (similar to Morning Glory Farm)	0.5 MW
- 200 turbines of 10 kw (typical residential turbine)	2.0 MW
Limited approach	1.0 MW
- 2 turbines of 100 kw	0.2 MW
- 4 turbines of 50 kw	0.2 MW
- 60 turbines of 10 kw	0.6 MW

B - Nomans Commercial Area

Full Extent	
- 100 turbines of 3.5 MW	350.0 MW
Partial Extent	
- 50 turbines of 3.5 MW	175.0 MW

C - Cuttyhunk Commercial Area

Full Extent	
- 60 turbines of 3.5 MW	210.0 MW
Partial Extent	
- 30 turbines of 3.5 MW	105.0 MW

D - State Community Area

- 17 turbines of 3.5 MW	59.5 MW
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E - Federal Community/innovative Area

- 40 turbines of 3.5 MW	140.0 MW
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F - Federal Commercial Area

- 1000 turbines of 3.5 MW (less than 1% of the area identified by MMS)	3,500.0 MW
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Table 4: Permissive, Moderate, and Limited Approaches – Illustration on Land

These examples are to illustrate the idea of the range of approaches that could be adopted. The actual criteria might be different. For example, the range of possible noise criteria will be developed in collaboration with the acoustic engineer.

	Permissive	Moderate	Limited
Minimal Setback from Abutters	Height plus 10'	Three times height	Quarter mile
Noise Requirements	No requirement beyond DEP (10 dB above ambient)	5 dB above ambient 3 dB for tonal	3 dB above ambient
Area Restrictions Based on Significance of Resources (Public Open Spaces, Natural, Scenic/Cultural, Hazards)			
- Very Exceptional	Permitted with MVC review	Prohibited	Prohibited
- Exceptional	Permitted with town special permit	Permitted with MVC review	Prohibited
- Significant	Permitted as of right	Permitted with town special permit	Permitted with MVC review