



# **Report from the Landscape Subcommittee**

**Wind Regulatory Advisory Panel  
Virginia Department of Environmental Quality**

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## **Outline**

- **Introduction and Scope of Work**
- **Categories of Important Landscapes**
- **Local Government Jurisdiction / Land Use  
& Areas of Potential Adverse Impact**
  - **Background**
  - **Underlying Authority**
  - **Gaps and/or Limitations**
  - **Recommendation**
    - **Rationale**
    - **Status**
    - **Concerns**
- **Next Steps**

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3

## Introduction and Scope of Work

- The Landscape Subcommittee of the Wind RAP was tasked with identifying areas/issues and drafting recommendations with respect to land-based small (<100 MW) wind energy system
- The scope of work defined related to the potential adverse impacts of wind energy systems at the landscape scale

4

## Introduction and Scope of Work

- **Key topics of consideration included**
  - the role of local land use law, planning, and permitting and its relationship to the Permit by Rule
  - adverse visual impacts to historical resources and scenic landscapes
  - a variety of specific adverse environmental impacts to both geophysical and living natural resources

5

## Introduction and Scope of Work

- **Key Guiding Principles:**
  - PBR should facilitate the permitting of wind energy projects
  - PBR should impose such conditions and standards necessary to protect the Commonwealth's natural resources
  - PBR should, where relevant, require an analysis of the *beneficial* and *adverse* impacts of the proposed project on natural resources
  - PBR should, if *significant adverse impacts* to *historic resources* are likely, require the submission of a mitigation plan

6

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7

## Categories of Important Landscapes

- A variety of state and federal programs, along with programs managed by private organizations, identify or recognize major types of landscapes that deserve priority status for conservation.
- Often landscapes are sorted into groups based on discrete values such as wildlife habitat, historic/cultural significance, agricultural value, or significant scenic attributes. It is, however, recognized that landscapes and their values are not so easily sorted. Separating one type of landscape from another can be difficult.

8

## Categories of Important Landscapes

- The long and intimate relationship between people and the land guarantees that virtually any large landscape within Virginia will potentially represent multiple values.
- The following categories for recognizing landscapes are a first attempt to describe in general those that could be considered in developing a landscape measure for permitting wind energy facilities.

9

## Categories of Important Landscapes

### **Landscapes of Ecological Importance**

*Landscapes recognized for high-value habitat that have sufficient size and ecological functions to support sustainable populations of Virginia's native species*

Landscapes of ecological importance are sometimes referred to as “green infrastructure” by virtue of the crucial ecosystem services they provide for human communities and native wildlife

10

## Categories of Important Landscapes

### **Landscapes of Cultural Importance**

*Landscapes that reflect historic significance and day-to-day working relationships with land and water; they also include places specifically recognized for their ability to provide important and direct personal experiences with the Commonwealth's resources and stories*

Landscapes of cultural importance support the ways in which human relationships to place over time are reinforced, creating a true sense of place and identity unique to an area or region in Virginia

11

## Categories of Important Landscapes

### **Landscapes of Scenic Importance**

*Landscapes that are recognized for their visual importance as seen from areas of scenic or recreational value*

Landscapes of scenic importance are places that allow people to experience the state's natural and cultural resources, stories, and broader landscape through direct, personal interaction in the outdoors

12

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  - & Areas of Potential Adverse Impact
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      - Status
      - Concerns
  - Next Steps

13

# Local Government Jurisdiction / Land Use

## **Background**

- The landscape subcommittee explicitly addressed the role of local land use law, planning, and permitting and its relationship to the Permit by Rule.
- The issue explored by the subcommittee was the role of local land use law in addressing areas of potential significant adverse impact, and whether the Permit by Rule needed to augment permitting criteria at the local level.

14

# Local Government Jurisdiction / Land Use

## **Background (cont'd)**

- With respect to the potential adverse effects of wind energy systems, local land use law is the level at which regulation of the following would typically occur:
  - Setbacks
  - Minimum acreage
  - Maximum height
  - Sound
  - Blade clearance
  - Shadow flicker
  - Ice fall

15

# Local Government Jurisdiction / Land Use

- Visual appearance (color, finish, signage, advertising)
- Decommissioning (including land restoration)
- Impacts on cultural and historic landmarks
- Impacts on viewshed and scenic vistas
- Liabilities and sureties
- Compliance with building and electrical codes
- Lighting
- Signal emissions / Communications interference
- Notification of the Blue Ridge Parkway (Rockbridge County requires this)
- Mechanical operations of the turbine
- Protections against unauthorized access
- Utility connections
- Requirements for site plan or landscape plan
- Requirements for ongoing maintenance and (mechanical) monitoring
- Requirements for technical documentation

16

## Local Government Jurisdiction / Land Use

### **Authority**

- When considering an application for the construction of land based wind turbines, localities act within the context of their general zoning powers set forth in Section 15.2-2283 of the *Code of Virginia*.

17

## Local Government Jurisdiction / Land Use

### **Gaps and/or Limitations**

1. Not all localities have wind ordinances
2. Virginia wind ordinances can and do differ widely
3. Not all localities have zoning
4. Local wind ordinances in Virginia have been silent with respect to many environmental factors already regulated at state and federal levels with exception of requirement of compliance with local erosion and sediment ordinances

18

## Local Government Jurisdiction / Land Use

### **Recommendations**

1. A Permit by Rule meant to protect natural resources should not impose limitations on the authority of local governments to regulate in the areas identified above.
2. A Permit by Rule should augment local E&S regulations (*addressed in next section*).
3. A Permit by Rule should augment decommissioning requirements (*although some ordinance address this*).
4. A Permit by Rule should address environmental issues that are largely not considered by local ordinances (*addressed in next section and by Living Resources subcommittee*).

19

## Local Government Jurisdiction / Land Use

### **Recommendations (cont'd)**

- **Rationale:** Through zoning powers local governments generally regulate land-based wind turbines on matters that relate to safety, lighting, aesthetics, noise, height, setbacks, and structural integrity, but do not necessarily address E&S, decommissioning, and/or other issues/areas of an environmental, cultural, or historical nature.
- **Status:** General agreement
- **Concerns:** Augmented enforcement of E&S may conflict with DCR's pre-existing authority. It was deemed critical to develop a Permit by Rule that complements local ordinances and which avoid duplication of efforts.

20

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21

# Areas/Issues of Potential Adverse Impact

- Landscapes of Ecological Importance
  - ***Erosion and Sedimentation***
  - *Forest Loss and Fragmentation*
  - *Farmland*
- Landscapes of Cultural Importance
  - *Cultural and Historical Resources*
- Landscapes of Scenic Importance
  - *Scenic and Recreational Resources*
- General Impacts to Landscape
  - *Transmission and Interconnection*
  - *Communications Interference*
  - *Ground Transportation and Traffic During Construction*

22

# Erosion and Sedimentation

- **Background**

- Site disturbance for the construction of wind turbines and wind farms has the potential to create significant erosion and surface water sedimentation through the displacement of soil, rock and rubble. In addition to potentially degrading soil and surface water resources, sedimentation of cold water streams is of concern.
- Because Virginia's land-based wind resources are greatest along mountain ridgelines and upland slopes, E&S constitutes a major potential adverse impact.

23

# Erosion and Sedimentation

- **Authority**

- Two different agencies directly or indirectly affect E&S:
  - Department of Conservation and Recreation, Division of Soil and Water Conservation (DCR-DSWC)
    - The construction phase of wind projects fall under the regulatory requirements of two programs administered by DCR-DSWC: The *Virginia Erosion and Sediment Control Program* and the *Virginia Stormwater Management Program*.
  - Department of Game and Inland Fisheries, Environmental Services Section (DGIF)
    - DGIF administers the *Virginia Fish and Wildlife Information Service (VWIS)* and has regulatory authority for Virginia's Threatened and Endangered fish and wildlife. In addition, DGIF is vested with the authority to conserve and manage all fish and wildlife in the Commonwealth.

24

# Erosion and Sedimentation

- **Gaps and/or Limitations**

- Local E&S officials in rural areas, where Virginia's wind resources are greatest, often do not have the expertise to effectively review E&S plans for steeply sloped or sensitive environments. In addition, they may lack the requisite manpower for rigorous site inspections and enforcement.
- Site developers are not obligated to seek DGIF reports on the proximity of cold water streams to their construction sites, and DGIF mitigatory measures for cold water streams are recommended but not mandatory.

25

# Erosion and Sedimentation

- **Recommendations**

1. A Permit by Rule should strengthen the DCR local E&S system with respect to wind installations by (a) requiring early notification of DCR of a pending wind project, (b) requiring a performance bond (this is currently optional for local programs), and (c) requiring third party inspectors.
2. A Permit by Rule should hold applicants accountable for obtaining DGIF cold water stream analysis reports by requiring that developers request such reports and explicitly address how they will address any mitigatory measures recommended by DGIF.

26

# Erosion and Sedimentation

- **Recommendations (cont'd)**

- **Rationale:** Small and/or rural localities may lack expertise/manpower to enforce E&S or address potential impacts on cold water streams.
- **Status:** General agreement
- **Concerns:** Augmented enforcement of E&S may conflict with DCR's pre-existing authority.

27

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28

# Forest Loss and Fragmentation

- **Background**

- Forest fragmentation occurs when a large region of habitat has been broken down, or fragmented, into a collection of smaller patches of habitat. Fragmentation typically occurs when land is converted from one type of habitat to another. Wind energy construction projects in forests will create forest fragmentation, a form of habitat fragmentation, occurring when forests are harvested in a manner that leaves relatively small, isolated patches of forest.

29

# Forest Loss and Fragmentation

- **Authority**

- The Code of Virginia provides authority to the State Forester to provide protection, enhancement and improvement of Virginia's forest resources. Statutory authority exists to protect forests from wild fires, assist with the establishment and care of new forests, improve existing forests, and to ensure clean water from forests activities.

30

# Forest Loss and Fragmentation

- **Gaps and/or Limitations**

- The Department of Forestry does not have authority to regulate the management of forests zoned for more intensive use than agriculture or forestry.
- No Commonwealth of Virginia agency is currently mandated to preview and assess sites for potential forest impacts.

31

# Forest Loss and Fragmentation

- **Recommendations**

- A Permit by Rule should require that a checklist based on generally acceptable forest reviews used for other construction environmental site reviews be completed by the developer in consultation with a forester or in-house staff.
- DOF should recommend voluntary Best Management Practices during consultation with DEQ.

32

# Forest Loss and Fragmentation

- **Recommendations (cont'd)**

- **Rationale:** Forest loss and fragmentation are not addressed elsewhere.
- **Status:** General agreement
- **Concerns:** Forest impacts are not explicitly recognized in the statute as a trigger for mitigation.

33

# Areas/Issues of Potential Adverse Impact

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34

# Farmland

- **Background**

- The Virginia Department of Agriculture and Consumer Services (VDACS) promotes the economic growth and development of Virginia agriculture, provides consumer protection and encourages environmental stewardship. Accordingly, farmland conversion to other uses is an area of interest for the agency. A record of conversion of farm and forest lands to other uses by small renewable wind energy projects would be useful in identifying the impact of such projects on farmland preservation.

35

# Farmland

- **Authority**

- Certain state agencies report to the Secretary of Agriculture and Forestry and the Secretary of Natural Resources annually with an analysis of the impact that the agency's regulations and projects have on the conversion of farm and forest lands.

36

# Farmland

- **Gaps and/or Limitations**

- The state of the current regulatory regime suggests some need for reporting of impacts of wind energy projects on the conversion of farm and forest lands to other uses. An applicant's assessment of the significant negative impacts on agricultural and forestry activity in neighboring parcels and proposed mitigation measures to reduce these negative impacts would be useful.

37

# Farmland

- **Recommendations**

- VDACS should request, during consultation with DEQ, an accounting of number of acres of farmland converted and measures taken to ameliorate for the loss.
  - **Rationale:** Loss of farmland is not addressed elsewhere.
  - **Status:** Likely agreement
  - **Concerns:** Farmland impacts are not explicitly recognized in the statute as a trigger for mitigation.

38

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39

## Cultural and Historical Resources

- **Background**
  - The construction and operation of wind turbines and wind farms, regardless of scale, have the potential to significantly impact cultural and historical resources. Site preparations and construction can destroy archaeological and historic architectural resources if present within the project area. Once constructed, turbines can adversely affect the historic setting of historic architectural resources and other critical cultural landscapes.

40

## Cultural and Historical Resources

- **Authority**

- The duties of the Department of Historic Resources (DHR) are to encourage, stimulate, and support the identification, evaluation, protection, preservation, and rehabilitation of the Commonwealth's significant historic, architectural, archaeological, and cultural resources; to establish and maintain a permanent record of those resources; and to foster a greater appreciation of these resources among the citizens of the Commonwealth [*Code of Virginia* § 10.1-2202].
- DHR has developed *Guidelines for Conducting Cultural Resource Survey in Virginia* (1999; rev. 2003) which establish minimum standards for all archaeological and architectural survey in Virginia.

41

## Cultural and Historical Resources

- **Authority**

- The enabling legislation for the Permit by Rule [HB 2175] specifically includes as a condition for issuance an analysis of the beneficial and adverse impacts of the proposed project on natural resources and, if adverse impacts to historic resources are likely, the preparation of a mitigation plan detailing reasonable actions to avoid, minimize, or otherwise mitigate such impacts.
- In certain situations, Section 106 of the National Historic Preservation Act of 1966 (as amended) may apply to the project or portion thereof.

42

## Cultural and Historical Resources

- **Gaps and/or Limitations**

- DHR has no regulatory authority regardless of whether Section 106 applies to the project and must rely on the responsibilities and authorities of others to enable and enforce its recommendations.

43

## Cultural and Historical Resources

- **Recommendations**

- A Permit by Rule should require within all areas of land disturbing activity archaeological survey and evaluation in consultation with DHR and in accordance with established state guidelines.
- A Permit by Rule should within the 1.5-mile radial survey area around the project (a) evaluate the project's potential direct and indirect effects to all National Historic Landmarks, National Register-listed properties, battlefields, and rural historic districts; (b) evaluate the project's potential direct and indirect effects to all identified historic properties; and (c) prepare and submit as part of a complete application a mitigation plan detailing the actions to be taken to avoid, minimize, or otherwise mitigate adverse impacts.

44

## Cultural and Historical Resources

- **Recommendations (cont'd)**

- A Permit by Rule should within a 5-mile radial study area around the project (a) require the collection from the Department of Historic Resources, other affected local and state governments, and local historical societies information on known historic resources; (b) seek the comment of Native Americans that may attach traditional religious and cultural importance to properties; and (c) seek public comment on the project's potential impact to historic resources.

45

## Cultural and Historical Resources

- **Recommendations (cont'd)**

- **Rationale:** The statute explicitly addresses significant adverse impacts to historic resources.
- **Status:** Mixed
- **Concerns:** A protocol / menu of recommended mitigation strategies needs to be developed; need to balance level of significance of impacts with burdens imposed by suggested recommendations; need to consider less stringent requirements for small projects if a tiered PBR is developed.

46

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47

## Scenic and Recreational Resources

- **Background**
  - Wind turbines become the focal point of visual and aesthetic concerns based on size and the visual patterns created by spacing, appearance, physical markings and lighting. The number of turbines and the size of the wind turbines is the predominant source of visual contrast created by a wind energy facility. Often the maximum turbine and propeller height is over 300 feet. At this scale, and in settings that are typically free of other structures, trees and intervening terrain, wind turbines will be a visible and predominant feature in the landscape.

48

## Scenic and Recreational Resources

- **Authority**

- The Code of Virginia §10.1-108 defines environment as “the natural, scenic, scientific and historic attributes of the Commonwealth.” The effect of planning, transportation, mining, signage, advertising and management of the environment, including its scenic values are also referenced in the Code of Virginia.

49

## Scenic and Recreational Resources

- **Gaps and/or Limitations**

- While there are generally not specific regulatory programs that protect the scenic views from important resources, the designation language usually directs all agencies which permit projects that could impact these resources to consider the impact of the project on the resource before permits are issued.
- Local landmark protection laws and other local land use controls can certainly be applied.
- Because of the subjectivity of human values and perception, it is challenging to clearly define the viewshed impact of a proposed facility and reach consensus on when the impact is truly of significance and to whose standard.

50

## Scenic and Recreational Resources

- **Recommendations**

- A Permit by Rule should require that existing and potential designated scenic resources as described in the Virginia Outdoors Plan that fall within a 5-mile radial study area be incorporated into visual impact assessment conducted as part of project planning.
- DCR should recommend an approach to assessing, scoring, and mitigating adverse scenic impacts during consultation with DEQ.

51

## Scenic and Recreational Resources

- **Recommendations (cont'd)**

- **Rationale:** Consideration for scenic impacts is not addressed consistently among localities, consideration for scenic impacts between adjacent localities is not typically considered
- **Status:** Uncertain, to be determined
- **Concerns:** Scenic impacts are not explicitly recognized in the statute as a trigger for mitigation.

52

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53

## Transmission and Interconnection

- **Background**
  - Interconnection to the grid can be accomplished in a variety of ways depending on the size of the project and proximity to the grid, with either the wind developer or utility owning and operating the connecting facilities. Whether constructed and operated at transmission or distribution voltages, these interconnections involve electric lines that may extend in a linear nature well beyond the wind project site.

54

## Transmission and Interconnection

- **Authority**

- All generators – whether private wind farms or public utilities – must follow the same process in obtaining permission to connect to the existing electric grid. PJM is responsible for managing the grid for the mid-Atlantic region, including Virginia. Interconnection requests are governed by PJM's Open Access Transmission Tariff (OATT).
- Sections 56-46.1 and 56-265.2 of the Virginia Code require that all proposed transmission lines at or above 138kV must be reviewed and approved by the Virginia State Corporation Commission (SCC).
- For transmission lines below 138 kV, the state's public utilities have adopted a procedure comparable to the procedure used in the SCC approval process for projects 138kV and above. This procedure ensures state and local agencies (DHR, DCR, etc.) are consulted in these projects.

55

## Transmission and Interconnection

- **Gaps and/or Limitations**

- There is currently not a direct regulatory tie between a generation project and interconnecting transmission or distribution lines. Public utilities have an established and accepted process for the regulatory approval by the SCC (for lines of 138 kV and higher) and the localities (for lines under 138 kV) for the siting and construction of transmission and distribution facilities, which serves to engage all interested parties in the project. A private transmission developer proposing a project would generally be required to follow these same procedures.

56

## Transmission and Interconnection

- **Recommendations**

- A Permit by Rule should exclude interconnecting facilities beyond the wind farm's on-site electrical collection station and recognize that interconnection facilities associated with a wind project must follow established industry, SCC, and local siting and construction processes as applicable to the voltage level being considered.
- **Rationale:** Practically speaking, siting and construction of the interconnection facilities will be a separate and unique project in and of itself for regulatory purposes than the generating project. Ensuring the two projects are considered separately will help to ensure the unique differences between the two are considered in the proper light.
- **Status:** General agreement
- **Concerns:** Efforts to sidestep the existing transmission siting process could lead to avoidable delays and development costs

57

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  - *Scenic and Recreational Resources*
- General Impacts to Landscape
  - *Transmission and Interconnection*
  - **Communications Interference**
  - **Ground Transportation and Traffic During Construction**

58



# Next Steps

???