

## Industrial Wind Energy Expertise Test

[**Note 1:** credit will only be given for explanations that indicate a solid understanding of the issue – i.e. no points are given for guesses.]

[**Note 2:** this is not a comprehensive assessment of a person's industrial wind energy expertise, but is intended to be a representative sample of pertinent questions.]

[**Note 3:** this test is not intended to ascertain that an individual meets the legal definition of an "expert," but is rather a tool to evaluate relative competency.]

*Some relevant background questions:*

1. What is the definition of "Science"?
2. What are the four necessary elements of a genuine scientific assessment?
3. What is the scientific definition of the term "renewables"?
4. Are renewable energy sources homogeneous?
5. Explain how the reliability of Industrial Wind Energy (IWE) compares to the reliability of conventional electricity sources?
6. What does the term "Capacity Factor" mean?
7. What are the typical Capacity Factors for land and offshore IWE?
8. What does the term "Capacity Value" mean?
9. What are the typical Capacity Value for land and offshore IWE?
10. Explain the details of IWE auxiliary power needed.
11. Explain the differences between Open Cycle Gas Turbines (OCGT) and Combined Cycle Gas Turbines (CCGT), and the relevance to IWE.
12. Identify other Grid technical accommodations to accommodate IWE.
13. If a IWE project is marketed as "serving 1000 homes," is that an accurate statement?
14. How frequently is the Electric Grid's Supply and Demand balanced?
15. What is a "Base Load" power supply, and what energy sources provide us Base Load electric power?
16. Can IWE, by itself, supply Base Load electric power?
17. What is a "Load Following" electric power supply and what energy sources provide us Load Following electric power?
18. Can IWE, by itself, supply Load Following electric power?
19. What is a "Peaking" electric power supply and what energy sources provide us Peaking electric power?

20. Can IWE, by itself, supply Peaking electric power?
21. What is the purpose of Grid Reserves, and what percentage are these typically?
22. What is the effect of IWE on Grid Reserves?
23. What is a "Dispatchable" electrical energy source? Is IWE Dispatchable?
24. How does the power density of wind compare to coal? to nuclear?

*Some cost of electricity economic questions:*

25. What country has the highest percentage of IWE?
26. What is the approximate US residential electricity cost per KWH?
27. What is the approximate Denmark residential electricity cost per KWH?
28. Is "levelized cost" an appropriate way to compare IWE to conventional energy sources?
29. Explain how the government's EIA calculations of IWE costs, are misleading.
30. Explain how the Dutch Auction for retail electricity prices works.
31. Identify Grid financial accommodations and concessions to accommodate IWE.
32. Does IWE provide Reactive Power to the Grid? What difference does it make?
33. Explain in detail, the actual typical consumer retail costs of IWE.

*Some Global Warming related questions:*

34. How much CO<sub>2</sub> is generated for the manufacture and construction of a typical 2.5 MW IWE turbine?
35. What have independent empirical studies concluded about the amount of CO<sub>2</sub> savings from IWE?
36. What are the CO<sub>2</sub> studies promoted by IWE lobbyists based on?
37. What's the main problem with the CO<sub>2</sub> studies promoted by IWE lobbyists?
38. What are Rare Earth Materials, and why are they necessary for IWE?
39. How many pounds of Rare Earth Materials are used in a typical IWE turbine?
40. What are the environmental impacts of Rare Earth Material mining and processing?
41. How sustainable is IWE dependence on Rare Earth Materials?

*Some local law general questions:*

42. When IWE is proposed to local legislators, what should be their main concern?
43. Identify forty (40) possible IWE issues that host communities may encounter.
44. Which of the community IWE issues are the most critical to regulate?
45. Explain the pros and cons of regulating IWE vs prohibiting it.
46. What is a LLC and how long does the initial developer typically own the property?

*Some wind eco-system related questions:*

47. What is the major flaw in the terms of almost all IWE ordinances, with regards to the environmental tests required?
48. What is the simple solution to the environmental tests flaw?
49. What are EMFs, and do IWE's produce EMFs?
50. What are some consequences of EMFs on domestic animals?
51. What is the economic impact to a community due to birds being killed by IWE?
52. What is the economic impact to a community due to bats being killed by IWE?
53. What is a possible hydro-geological IWE impact?
54. What are some other eco-system IWE consequences?
55. Are there scientific studies that have concluded that IWE affects local weather?

*Some wind property value & tourism related questions:*

56. Name some studies that have concluded that IWE will result in property devaluation.
57. Identify at least two major flaws in Hoen IWE property value studies.
58. What are the main elements of a IWE Property Value Guarantee (PVG)?
59. What are the main reasons why a PVG is a critical element in a IWE law?
60. Name at least three reasons why a IWE PVG is not a tax.
61. Name some studies that have concluded that IWE will result in tourism reduction.
62. Are the main studies showing IWE tourism reduction generated by anti-IWE sources?

*Some wind energy health related questions:*

63. Identify some possible human health impacts from nearby IWE.
64. Explain the fallacy of the IWE lobbyists' position that turbines are no louder than a refrigerator.
65. Explain what infrasound is, and why it's potentially problematic.
66. True or false: the health effects of infrasound can cause death?
67. What does the Science and legal precedent indicate is a proper IWE acoustical limit?
68. Percentage wise, how much louder is a 55 DBa limit from a 35 DBa limit?
69. What is a proxy test, and how is it applicable with IWE acoustics?
70. What does the Science and legal precedent indicate is a proper setback from IWE?
71. Explain whether and why IWE setbacks should be from property lines or homes.
72. Explain what the Precautionary Principle is and how it relates to IWE.
73. Name at least five reasons why the majority of people near IWE will not complain about turbine induced health problems.
74. What US local Health Board officially declared IWEs a health hazard?
75. What country's National Institute of Health has the most scientific position on IWEs?
76. In the US, which has caused more deaths: IWE or nuclear power?

*Some other misc wind energy local economic questions:*

77. What is the typical Net economic impact of an IWE to a host community?
78. Does it make sense to include a "salvage value" when calculating decommissioning costs?
79. What is the difference between an IWE lease and an easement?
80. What is the number of potential legal and economic liabilities identified for IWE leaseholders? Name at least five (5).

*Some wind energy and the military related questions:*

81. Explain at least three types of conflicts that exist between military bases and IWE.
82. Are military base COs free to publicly explain IWE conflicts with their facility?
83. What is the DOD Wind Siting Clearinghouse?
84. What is the criteria the DOD Wind Siting Clearinghouse uses to approve a IWE?
85. What additional criteria should the DOD Wind Siting Clearinghouse be using?
86. What is the NDAA and how does it relate to IWE?
87. Name at least one case where a IWE will likely result in a national security reduction.

*Some general wind energy questions:*

88. Is it appropriate to call a IWE project a "wind farm"? Why or why not?
89. What is the difference between the terms "power" and "energy"?
90. What's the main flaw in the "level the playing field" argument?
91. What is the IWE PTC, and how much is it?
92. If we are comparing two electricity sources, is the number of jobs produced by each source an appropriate basis to decide which is preferable? Why?
93. What is the main driving factor for IWE in most states?
94. Why does having a cost on carbon make no sense?
95. Is an "All of the Above" energy policy, a sensible approach?
96. What is a more appropriate energy policy slogan than "All of the Above"?
97. Promoters compare IWE to coal (e.g. saying it does less harm). Is that legitimate?
98. Under what circumstances can IWE be compared to conventional electrical energy sources?
99. Marketers say IWE is "free, clean and green." Which of these is true?
100. What scientific proof is there that IWE is a net societal benefit?

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