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Letter of Transmittal and Executive Summary
Application for Special Permit for Dartmouth Wind Turbine Project

The attached document seeks approval for a Special Permit for a wind turbine project consisting of two 1,650 kW wind turbines to be mounted on 100-meter (328 foot) towers on DPW land off 687 Chase Road in South Dartmouth.

Atlantic Design Engineers LLC (ADE) carried out a feasibility study that included, among other aspects, shadow-flicker, noise and simulated visualization. Earlier ADE performed an economic analysis in their prefeasibility report that showed positive returns to the town. Since then the economics have improved owing to the passage and interpretation of the Net Metering portion of the Green Communities act, and the awarding of \$2 million in Clean Renewable Energy Bonds (CREBs) to the town by the IRS. It is 99% certain that the project will return a net benefit of \$376,000 in the first year of operation and a total of \$19 million over the 20-year life of the project. The average expected returns (50% certainty) are \$888,000 in the first year and \$32 million over the project life.

Shadow-flicker has the potential to affect about 94 residences in total, but 75 of these would be for nine hours or less per year. Eighteen residences might receive between 10-19 hours per year, and only one residence might see slightly over 20 hours per year. These values are biased on the high side because the analysis does not account for screening of houses by trees, shrubs or other structures.

The noise generated and propagated by the two turbines is well below the allowable limit established by the Town Bylaw No. 34 in accordance with the Commonwealth standard of 10 dBA above ambient noise levels. The highest calculated increase in sound at one corner of the northwestern boundary of the DPW property is 2.5 dBA. Since all residences are located farther away, the increase in noise levels at all residences will be less than this. The limit of the human ear to detect changes in tonal sound levels ranges from 1-3 dBA depending on the frequency of the tone, but the turbines do not emit any pure tones. Therefore, it is highly unlikely that the increase in noise caused by the turbines will be detectable by the human ear.

Since the turbines are tall, they will be visible from various vantage points in the vicinity. Moreover, most of the neighborhoods near the turbines are heavily wooded, the houses there are typically of one story and they are on relatively small lots. Therefore, not all residences will be able to see the turbines. Nevertheless, they will certainly be visible from many homes and from vehicles using the roads in the area. They will be visible from the waters off the SouthCoast and may become landmarks for sailors.

Particular attention has been given to the matter of wetlands near the turbines. During the precise siting process, a detailed assessment of wetlands was conducted by our Environmental Affairs Coordinator with the assistance of DPW personnel and a New England wetlands expert. All proposed work will conform to the Dartmouth Wetland Bylaw and the Massachusetts Department of Environmental Protection standards. Prior to the start of work, the project will require an Order of Conditions from the Dartmouth Conservation Commission.

Owing to their height, the turbines need clearance from the Federal Aviation Administration (FAA) and from the Massachusetts Aeronautics Commission (MAC). The FAA approved the south turbine and the MAC approved both turbines in their original locations. However, the locations were altered to accommodate wetlands that were discovered after the filings. Thus it is necessary to re-file with both agencies.

Just prior to completion of the application for the Special Permit, the FAA notified us that they have found cause for hazard from the north turbine as originally sited. However, ADE had requested clearance for a 492-foot structure, whereas the proposed turbines would be only 462 feet tall. The FAA indicated that a 473-foot structure would have passed, so we anticipate that the new filing with the actual height will receive approval. Our economic sensitivity studies show that, even if the towers have to be lowered to 85 meters (413 feet total height), the project is still very highly worthwhile for the town. The first year and life-cycle returns would be \$732,000 and \$28,260,000, respectively, compared to the \$888,000 and \$32 million for 100-meter towers.

On behalf of the Alternative Energy Committee, I am happy to present this application for a Special Permit for a wind turbine project that promises extraordinary, predictable economic benefits, while delivering clean, renewable, sustainable electricity for the town for many years to come ... all this while protecting the environment and the character of the town.

Submitted by:



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