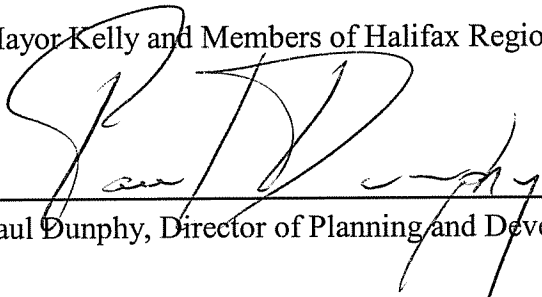


Halifax Regional Council
July 5, 2005

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY: 
Paul Dunphy, Director of Planning and Development Services

DATE: June 20, 2005

SUBJECT: Wind Energy Functional Plan

INFORMATION REPORT

ORIGIN

- This report has been initiated by staff in response to the emergence of wind generated energy as a new industry. This type of development was not envisioned when the Municipality's land use plans and bylaws were written. Therefore, they need to be updated. In addition the Municipality may have a strategic interest in participating in wind energy projects.

BACKGROUND

Wind-generated energy is quickly emerging as an economic, emission-free alternative to more conventional forms of electrical energy generation. Rising costs, greenhouse gas emissions and uncertainties associated with fossil-fuel based energy sources are spurring a demand for economic and environmentally compatible energy alternatives.

There are a number of factors fostering the emergence of wind energy as a new industry. These include government policies toward implementing the Kyoto Protocol, combined with financial incentives encouraging investment in alternative energy sources and a more open and competitive environment for electrical energy distribution. These factors, combined with Nova Scotia's physical setting and prevailing wind conditions make the region well suited to utilizing wind generated energy to offset the region's reliance on energy from more conventional sources.

Provincial deregulation of the energy sector enables private energy suppliers to partner with Nova Scotia Power to access the provincial power grid in order to utilize existing electrical transmission infrastructure. Electrical generation contracts awarded to private sector operators by Nova Scotia Power, for wind generation facilities have signalled the start of a new industry. A number of wind-generated energy projects have been developed in Nova Scotia, the most recent being a 17-turbine

wind energy park in West Pubnico. The attached photos of the West Pubnico project illustrate a developed wind energy park (Attachment 1).

Nova Scotia Power recently held a competition to identify wind energy developers who would be permitted access to the provincial power grid. Scotia Windfields Ltd. was the successful proponent for wind energy development within the "Chebucto Wind Field", which includes HRM. An affiliate company, Renewable Energy Systems Ltd. (RESL), is conducting a pilot project by erecting a single wind turbine in the Goodwood area. They also wish to erect a second turbine on land of the Halifax Regional Water Commission in the Lake Major water supply watershed. A separate Information Report on this proposal will be submitted to Council.

DISCUSSION

Wind Energy Farms

Large wind energy projects, referred to as wind farms, wind fields or wind parks, are becoming a part of many local landscapes in Europe and some parts of North America. Wind energy projects require no municipal services and usually require a limited degree of site disturbance for construction and operation. Consequently, wind energy proponents view these projects as consistent with principles of environmental conservation and some suggest that wind parks should be permitted in areas designated and zoned for conservation purposes. Conversely, other environmental advocates see rows of large turbine structures of upwards to nearly forty stories in height as incompatible with some natural settings.

The West Pubnico project was the subject of recent media reports on the economic potential of wind farms in Nova Scotia. Additionally, there have been reports of complaints from residents living in close proximity to the West Pubnico wind park about noise from the site and the operator's plans to examine noise abatement measures.

Municipal Opportunities in Wind Energy

The emergence of a wind energy industry presents an opportunity for HRM to play a significant role in how wind energy projects are developed within the region in order to ensure that the best interests of HRM citizens are served. A number of municipally-owned land holdings meet criteria used by industry in identifying potential sites for wind energy generation. In addition to a reliable wind source, the industry seeks sites that are:

- remote from populated areas and areas of visual prominence;
- readily accessible to existing electric power distribution infrastructure; and
- in close proximity to a market area of electrical load or demand, such as HRM's urban core.

As the development of wind-generated energy is capital intensive, some developers prefer long term land leases over outright ownership. RESL anticipates wind conditions at inland locations of higher elevations will be more conducive than at locations along the coastline. A number of HRM owned properties meet these criteria and HRM may wish to lease land for these projects.

Regulatory Framework

The wind energy industry is subject to provincial legislation. Projects producing more than 2 megawatts of power must undergo a provincial Class 1 environmental assessment. Such an

assessment requires registration with the Province and public review, with the possibility of further study if warranted by the Minister of the Environment. Any undertaking is also subject to a federal environmental assessment review if it receives federal funding or requires a federal permit or license or if it is to be located on federal lands. The prototypes that RESL wishes to erect for feasibility testing do not generate sufficient power to warrant an environmental assessment.

Although wind energy facilities are commonplace in many parts of the world, they are relatively new in North America and municipal regulations are evolving. The development of wind energy was not anticipated at the time HRM's current municipal land use policies and regulations were adopted. Consequently, the existing municipal planning strategies and land use bylaws do not specifically provide for either for wind energy farms or stand-alone wind turbines. Having said that, both scales of development are permitted within a variety of industrial, general and mixed use zones. This does not however mean that these areas are appropriate in terms of either land use compatibility or optimal wind orientation. Most local jurisdictions with wind energy projects have adopted specific land use policies and zoning regulations to address them.

Draft Regional Plan

The draft Regional Plan contains discussion and draft policies related to wind-generated energy projects and their potential impacts on the environment and nearby communities. The applicable text and policies from the draft Regional Plan are provided in Attachment 2 of this report. During its review of the draft Regional Plan, Regional Council directed further discussion on the subject of wind energy to a "parking lot" for future discussion on the potential for encouraging wind energy projects to develop in rural areas such as the Musquodoboit Valley.

The draft Regional Plan calls for the preparation of a Wind Energy Generation Functional Plan (See Attachment 2, Policy SW-31). Preparation of the Functional Plan is subject to Council adopting the Regional Plan and agreeing to assign some priority to this as a municipal initiative. In the meantime, there is a need to identify appropriate areas within HRM where wind energy facilities can be developed under municipal regulations and for Council to adopt appropriate land use policies and regulations in order to direct the future development of larger wind energy projects to appropriate locations.

Conclusion

Given the immediate need to provide a municipal regulatory environment in which the wind energy industry can operate within HRM, staff feels that it is appropriate to proceed with the preparation of a Wind Energy Functional Plan prior to adoption of the Regional Plan. The Wind Energy Functional Plan would:

- determine siting, acoustic criteria and visual impact;
- identify appropriate locations for large scale wind energy projects;
- examine the potential use of public lands for wind energy projects; and
- recommend municipal policies and land use regulations.

Staff will, in conjunction with the Energy and Underground Services Advisory Committee, undertake the preparation of a Wind Energy Functional Plan and bring forward recommendations to Council for its consideration.

BUDGET IMPLICATIONS

The preparation of a Wind Energy Master Plan will require outside consulting resources. Staff anticipates that any work to be undertaken can be accommodated by existing departmental budgets.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

ALTERNATIVES

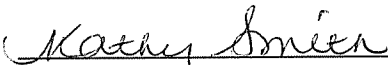
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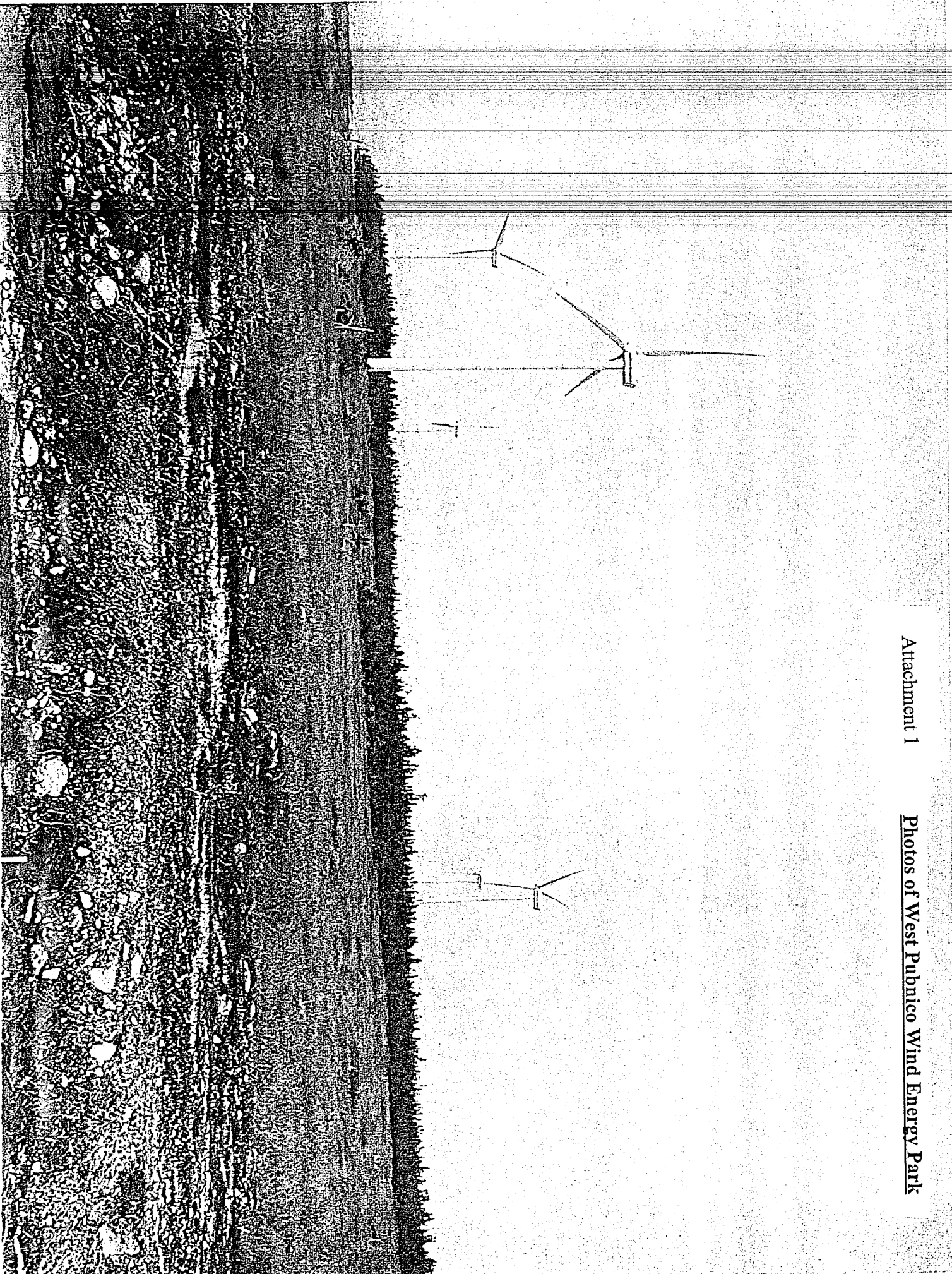
ATTACHMENTS

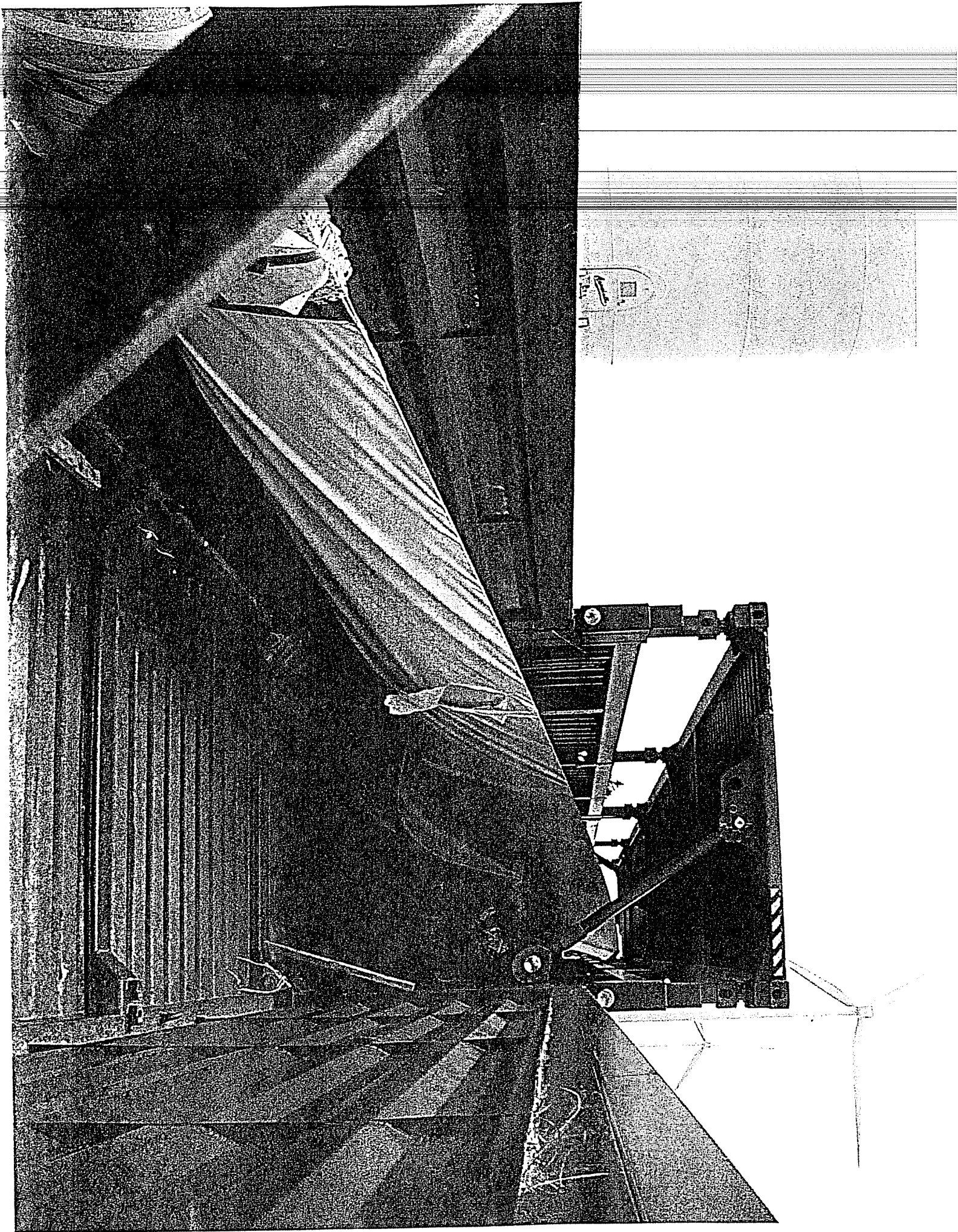
- Attachment 1 - Photos of West Pubnico Wind Energy Park
- Attachment 2 - Draft Regional Plan Policies

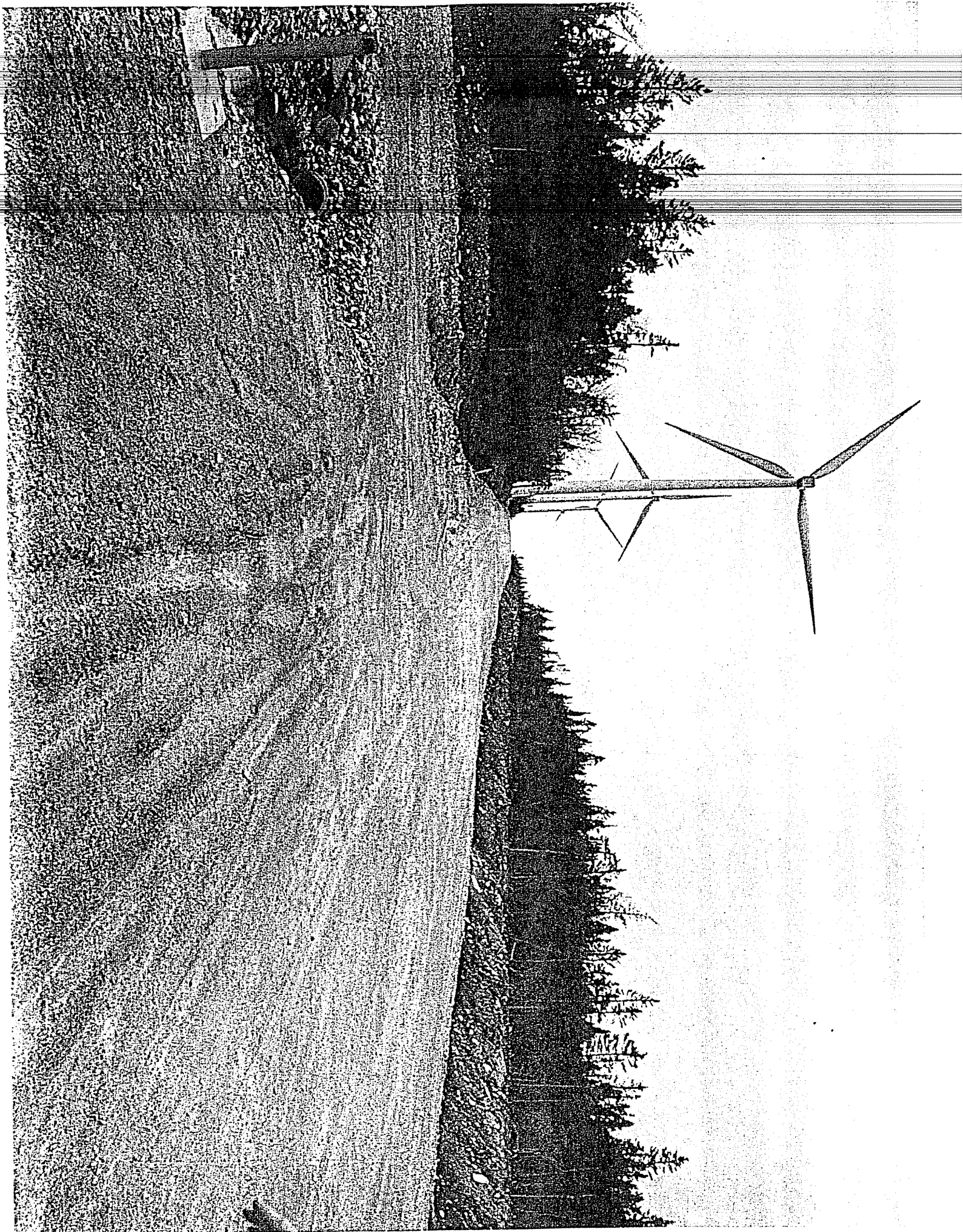
Additional copies of this report, and information on its status, can be obtained by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

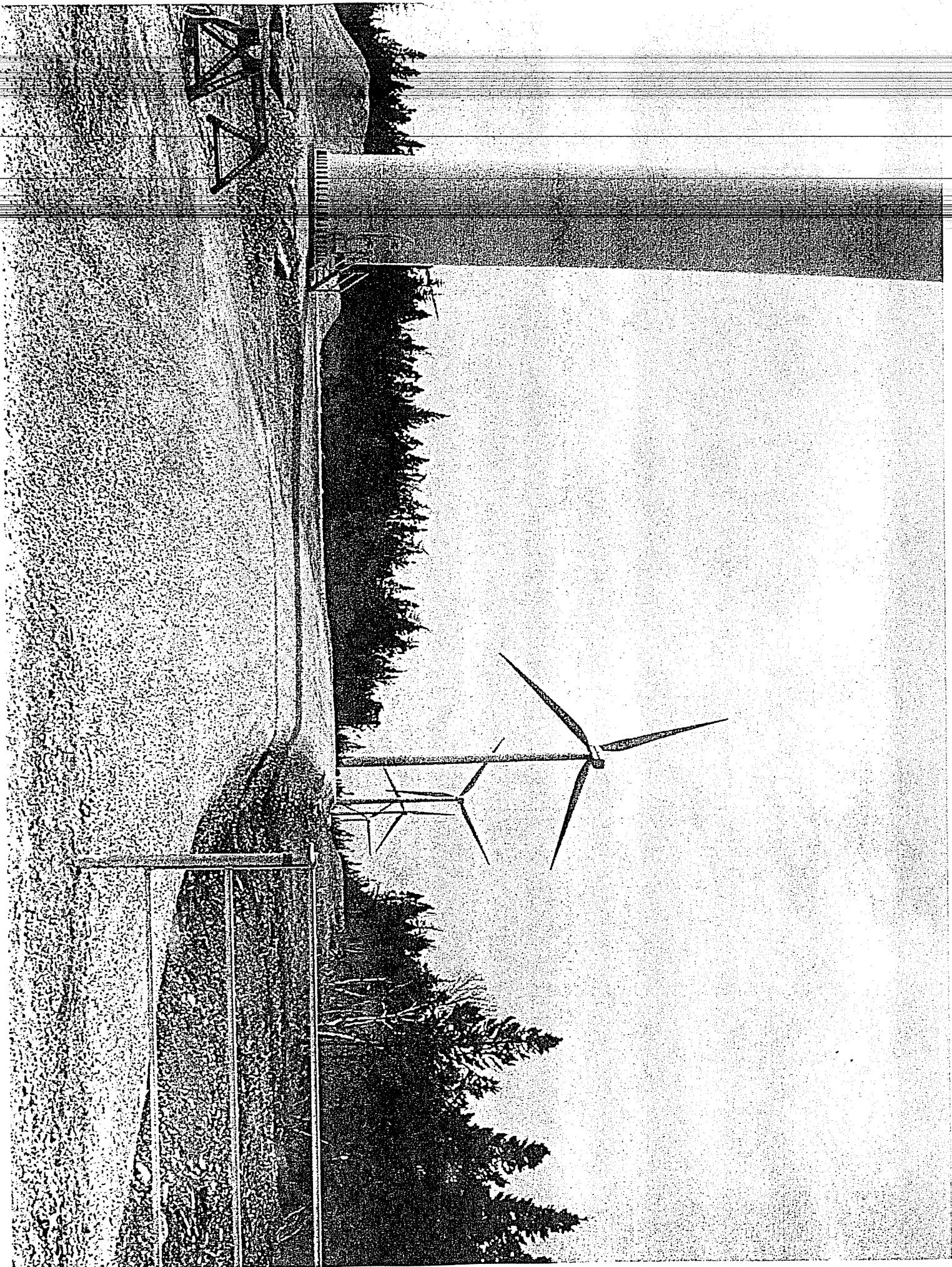
Report Prepared by: Jim Donovan, Manager Planning Applications, 490-6782

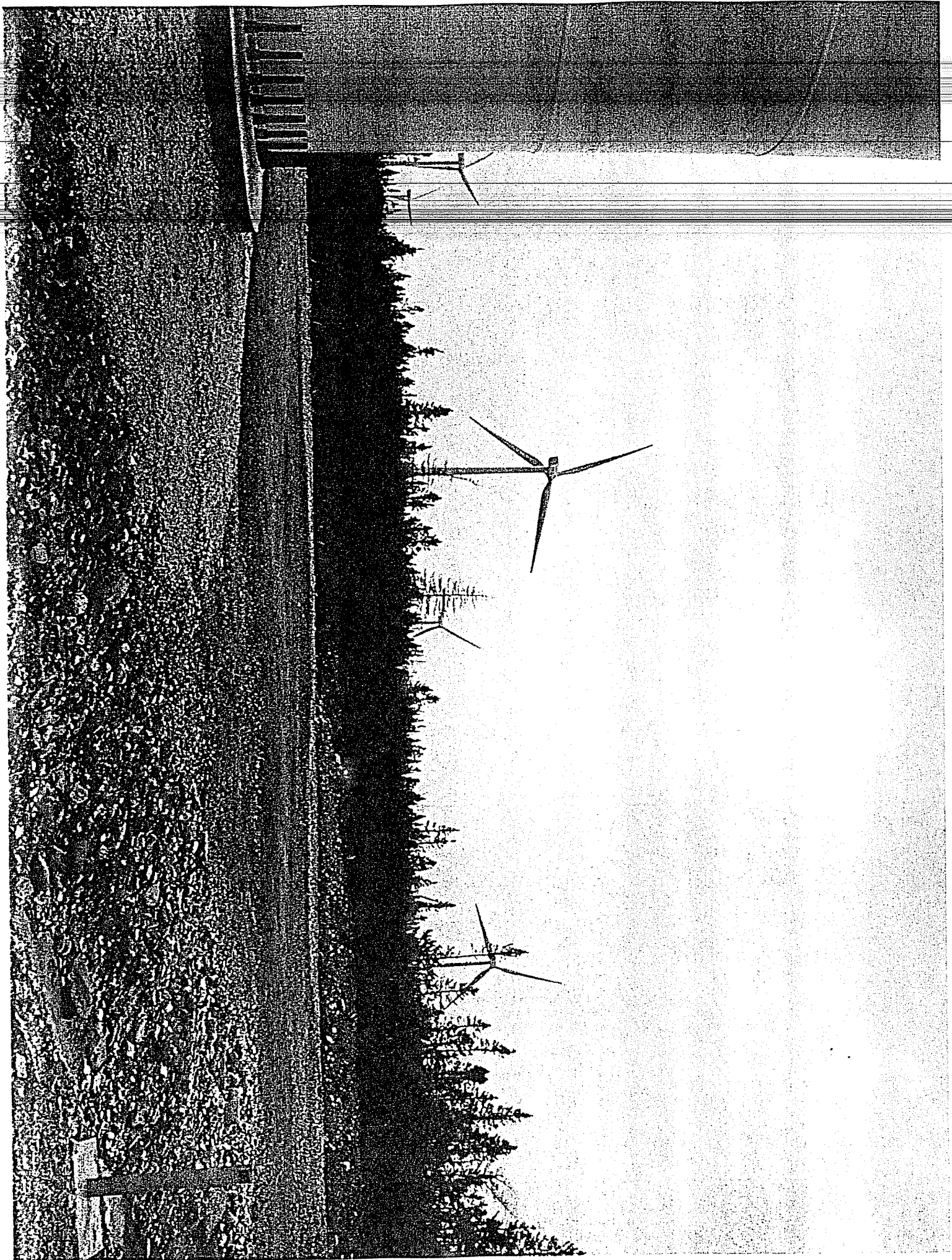
Report Reviewed by: 
Kathy Smith, Financial Consultant, 490-6513

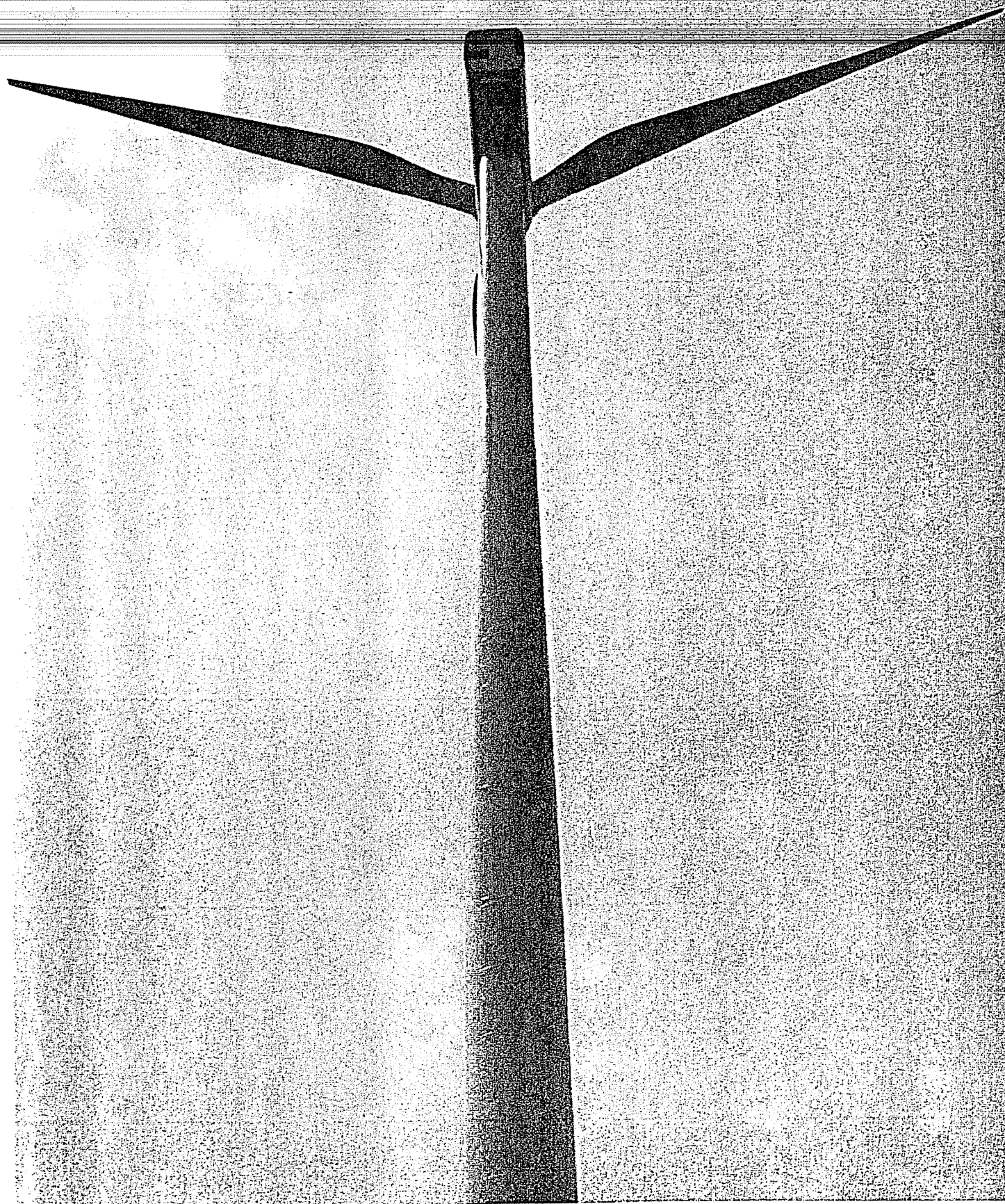


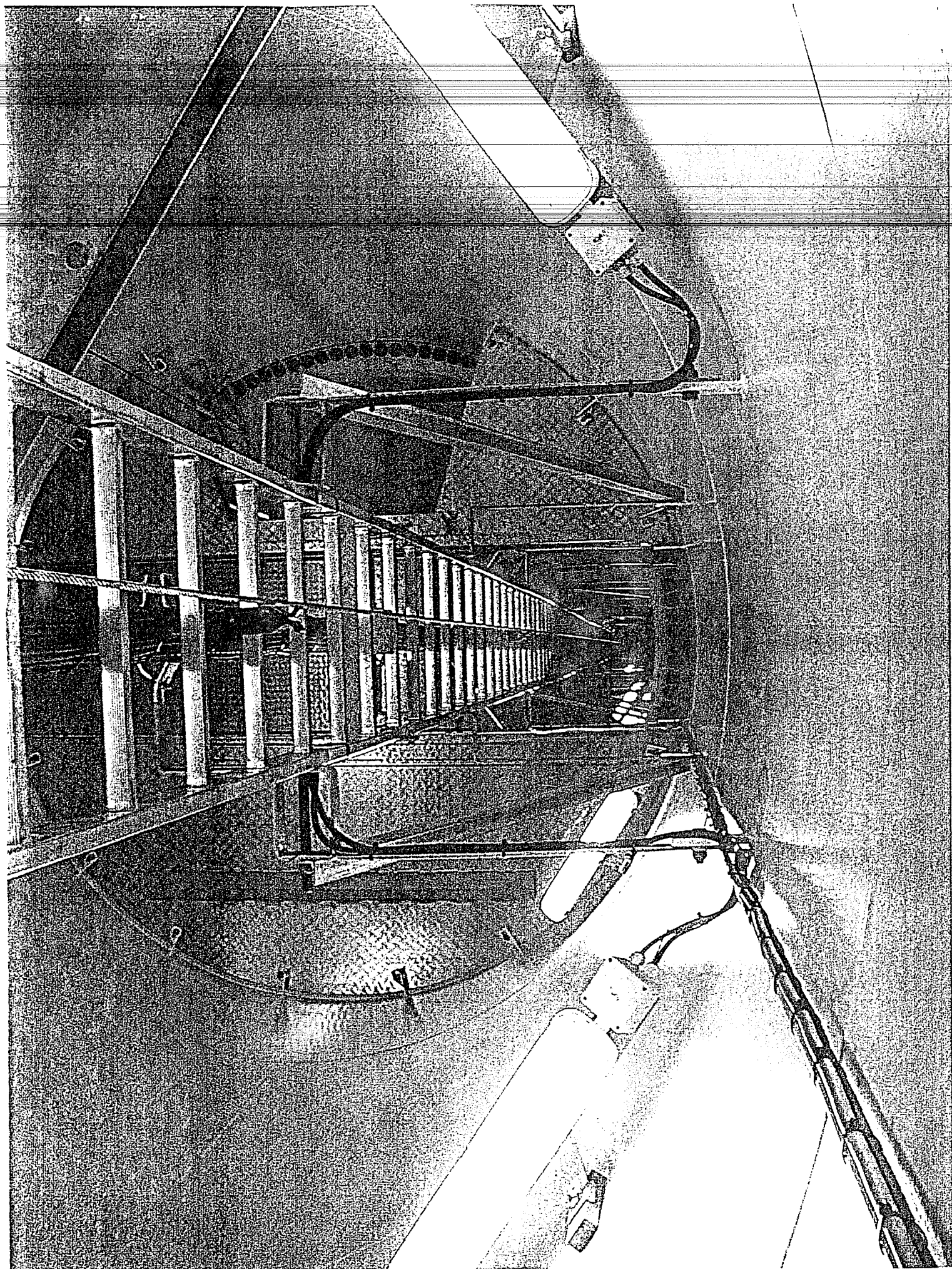












Attachment 2: Draft Regional Plan Policies

While this alternative source of energy will be of benefit to HRM, wind turbines with heights of twenty storey buildings and their associated site infrastructure and transmission lines, can have a profound impact on HRM's landscape if improperly sited. Experience from other North American municipalities reveal that noise is also a common issue with the operation of turbines and that they pose a safety hazard in populated areas in extreme weather conditions or if improperly constructed. For these reasons, HRM will control the siting of wind turbines to ensure that they are sited away from populated areas and significant cultural landscapes. To ensure compatibility and safety, turbine size, location, lighting, colouring, signage, and spacing are all factors to be considered. The municipality will also require the placement of wind turbines far enough from points of measurement to keep noise level at or below a permitted threshold measured at residences, schools, hospitals, churches and public libraries.

Policy SW-24 *HRM shall establish provisions in the Regional Land Use Bylaw to regulate the siting of wind energy facilities. The provisions shall include, but not be limited to, height, setback, noise, minimum ground clearance, tower failure, blade failure, abandonment, site reclamation, soil erosion, and accessory structures. Wind turbines shall generally be permitted as principal or secondary land uses within industrial, natural resource and agricultural zones, however, they shall not be permitted within residential, mixed use, parks, institutional, environmentally sensitive areas, conservation, preservation and cultural heritage zones. Amendments to the land use bylaw for siting of facilities within designated water supply zones may be considered.*

The draft Regional Plan states further on that, in anticipation of several wind generation projects being developed in HRM, a comprehensive approach to wind energy generation is an appropriate course of action. The applicable text and policy are as follows:

Environment Canada wind assessments for HRM have identified favourable conditions for the operation of wind turbines in several coastal and upland locations. Other siting requirements such as access to NSPI's transmission grid and local demand for electricity have led NSPI to designate HRM as a suitable location for the construction of wind turbines. Based on the region's increasing need for clean and renewable sources of electricity and other favourable siting conditions, it is possible that several wind turbines may be constructed in HRM in the near future.

Policy SW-31 *With federal, provincial and industry partners HRM shall support the development of an economically and environmentally sustainable wind turbine industry through the development of a Wind Energy Generation Master plan for the HRM.*