

Planning Commission Staff Report

May 28, 2020

Item 4

Applicant: Steve Painter

Location: N/A

Prepared by: Sean Conroy,
Community Development
Director

Public Hearing: Y

Zone: All residential

Attachments:

1. Application information.
2. Draft ordinance.
3. Noise Chart.

REQUEST

Consideration of an ordinance regulating Wind Energy Systems in Mapleton City.

BACKGROUND AND PROJECT DESCRIPTION

Residential wind energy conservation systems (WECS) are windmill-type structures designed to produce renewable energy for residential use. WECS are not currently identified as a permitted or conditional use in any residential zone and are therefore not permitted.

An application has been received to amend the zoning ordinance to allow WECS as a permitted use in residential zones. Staff has drafted the attached ordinance for the Commission's review and recommendation to the City Council.

EVALUATION

Staff is generally supportive of allowing citizens the opportunity to provide renewable energy alternatives on their properties, provided the proposed alternatives do not have significant negative impacts on adjacent properties. Solar is the most popular form of renewable energy and the City has restrictions on how solar may be implemented to limit impacts on adjacent properties. Solar is typically more economical than wind, which is why it is so much more common.

While solar is typically mounted nearly flush with a roof, or ground mounted at a height that doesn't impact neighboring views, WECS are typically attached to free standing poles and have the potential to impact views to a greater extent than solar. Based on the fact that the City has had very few requests for WECS, and that the potential visual impacts they could create in residential neighborhoods could be seen as detrimental, the Commission should first determine whether they should be allowed at all. If the Commission determines that they should be allowed, it should then review the proposed ordinance to determine if the requirements are appropriate.

Here is a summary of some of the primary components of the ordinance:

- WECS would be considered a permitted use in residential zones.
- The maximum height of any WECS would be the same as the maximum height established in the zone (typically 40'). Staff notes that some cities allow for taller poles as it typically leads to better energy production.

- WECS must be setback from the property lines a distance equal to the height of the pole plus one blade. For example, if the pole is 30' tall and the blade is 7' in length, the minimum setback would be 37'. This would ensure that if the tower tipped over that the fall would be contained on the subject property. Staff notes that this strict setback requirement would preclude WECS from many smaller, more narrow lots.
- The maximum sound of the turbine must be limited to 65 decibels as measured at the property line. Staff has included a noise chart as a reference to what 65 decibels equates to.

Staff did not include a minimum lot size requirement, however, that may be something the Commission may want to discuss as well.

RECOMMENDATION

Recommend approval of the proposed ordinance to the City Council.

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for utility-connected homes.

- Quiet operation
- Blends into the environment
- Designed for long life
- Low cost of energy
- Rated at 1.9 kW continuous, 2.6 kW peak



SKYSTREAM 3.7[®]

1.9 KW RESIDENTIAL POWER APPLIANCE

Skystream 3.7 is a breakthrough in a new generation of RPAs (Residential Power Appliances) that is changing the energy landscape of how homes and small businesses receive electricity. Skystream is the first fully integrated system that produces energy for less than the average cost of electricity in the United States and it produces usable energy in exceptionally low winds.¹

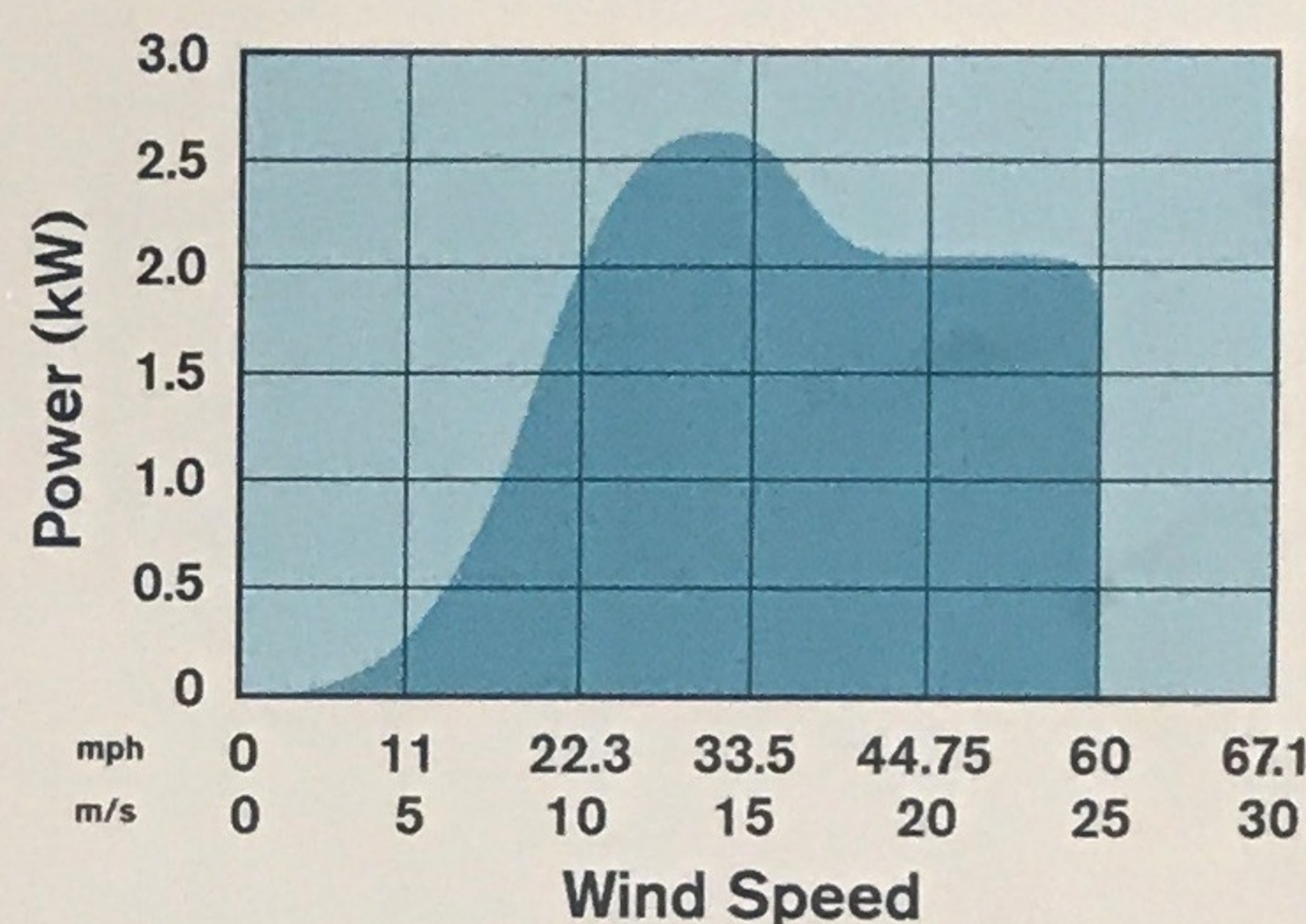
Skystream is available on towers ranging from 33 feet (10.2 m) to 110 feet (33.5 m)² tall. Its universal inverter delivers power compatible with any utility grid from 110-240 VAC. Skystream efficiently and quietly provides 40-90% of the energy needs for a home or small business. Any extra energy is fed into the grid spinning the meter backward.³

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Technical Specifications

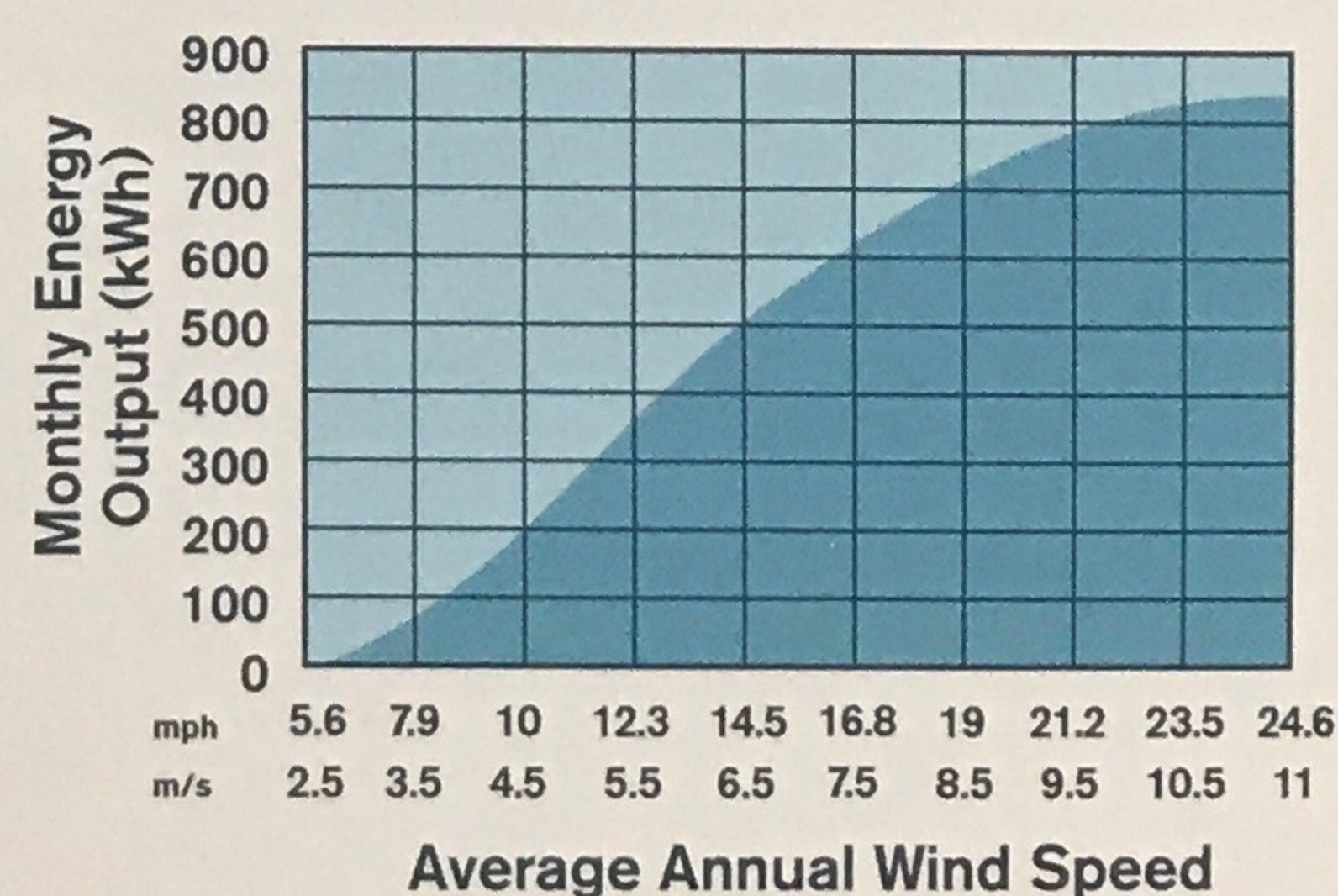
Model	Skystream 3.7
Rated Capacity	1.9 kW continuous output, 2.6 kW peak
Weight	170 lb (77 kg)
Rotor Diameter	12 ft (3.72 m)
Swept Area	115.7 ft ² (10.87 m ²)
Type	Downwind rotor with stall regulation control
Direction of Rotation	Clockwise looking upwind
Blades	3-Fiberglass reinforced composite
Rated Speed	50 - 325 rpm
Maximum Tip Speed	216.5 ft/s (66 m/s)
Alternator	Slotless permanent magnet brushless
Yaw Control	Passive
Grid Feeding	Southwest Windpower inverter 120-240 VAC 50-60 Hz
Battery Charging	Battery sensor available for battery charging systems
Braking System	Electronic stall regulation with redundant relay switch control
Cut-in Wind Speed	8 mph (3.5 m/s)
Rated Wind Speed	21 mph (9.4 m/s)
User Control	Wireless 2 way interface remote system
Survival Wind Speed	140 mph (63 m/s)
Warranty	5 year limited warranty

POWER



Data measured and compiled by USDA-ARS Research Lab, Bushland, TX

MONTHLY ENERGY



FIVE YEAR WARRANTY



Southwest Windpower

1801 W. Route 66
Flagstaff, AZ 86001 USA

928.779.9463

www.skystreamenergy.com

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1. Based on a 12 mph (5.4 m/s) wind and utility energy cost of \$.09/kWh
2. Taller towers are available
3. Assuming the Skystream 3.7 is producing more energy than the load is consuming

Printed on recycled paper using vegetable inks.

Springville Example



Springville Example



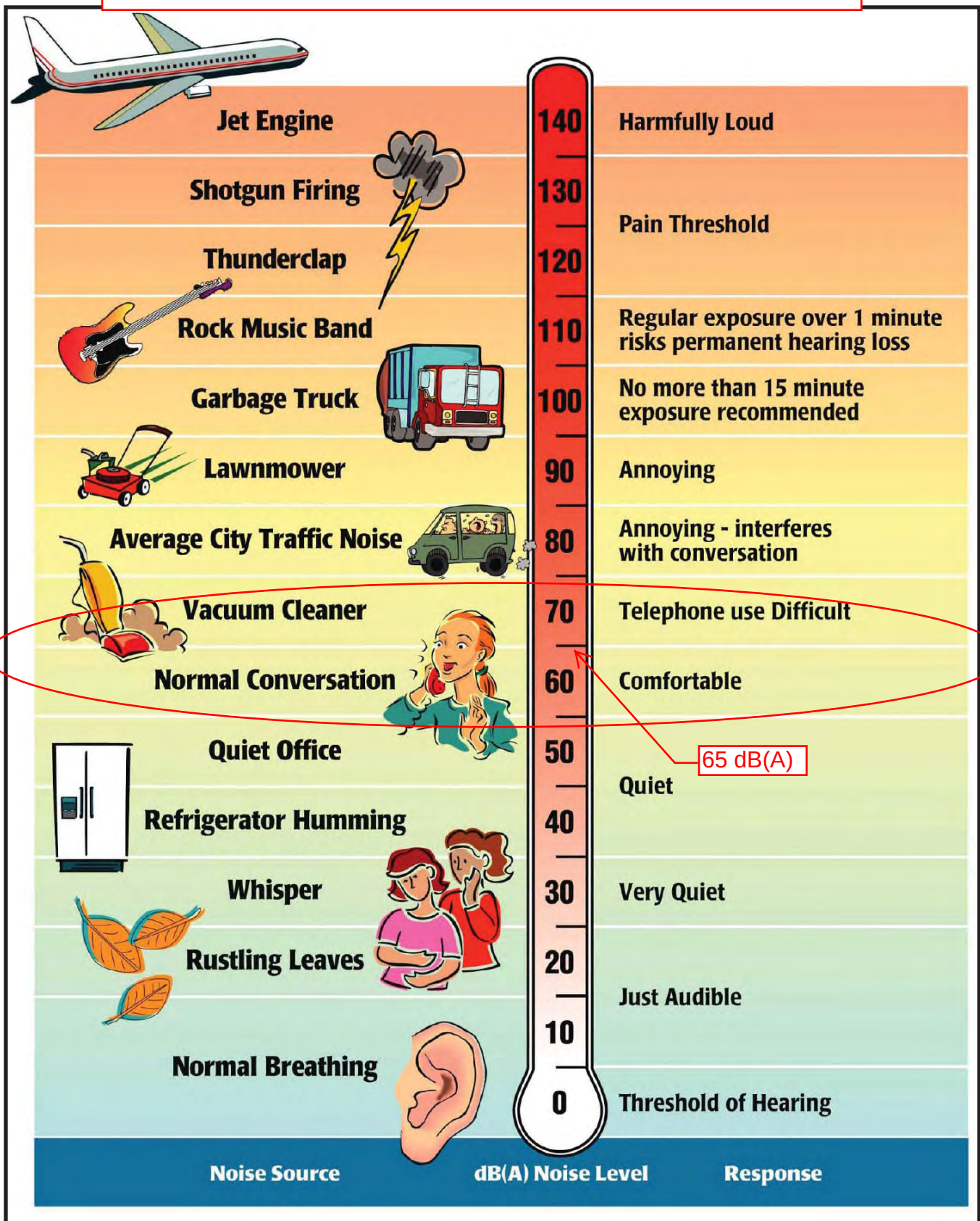
Attachment "2" - Draft Ordinance

18.84.445: WIND ENERGY CONSERVATION SYSTEMS (WECS):

- A. Purpose. The purpose of this section is to allow small renewable wind energy conservation systems (WECS) within the city while protecting residential areas and other land uses from potential adverse impacts of these systems.
- B. Use. WECS are considered a permitted use in all residential zones except for the Critical Environmental (CE-1) zone subject to the standards of this ordinance. Commercial wind power generating facilities are not permitted.
- C. Application process. All applicants shall make application by fulfilling all requirements of the city building permit application. Any cable connected to the wind energy system must be underground except for properties which obtain electric power service from aboveground lines and who are not otherwise required to underground.
- D. Design Standards. The following standards apply to wind energy systems:
 - 1. Height: The maximum height, including the blade and rotor system, shall not exceed the maximum height allowed in the zone in which the lot or parcel is located.
 - 2. Setback. The following setback standards shall apply:
 - (a) The base of the tower shall be set back from all property lines and public rights-of-way a distance equal to the tower height plus the length of one blade.
 - (b) The base of the tower shall not be located within any required front, side, rear or corner side setback as defined in the zone in which the property is located. In no case shall the tower be located between the street and the primary dwelling on the property.
 - (c) The base of the tower and turbine blades shall be set back from all structures on the same property a minimum of ten feet (10').
 - 3. Sound. Sound produced by the turbine under normal operating conditions shall be limited to sixty-five (65) decibels measured at the property line, except during naturally occurring short term events like severe storms.
 - 4. Signage: Signage is prohibited on the tower, blades, or accessory structures except for appropriate warning signs. Manufacturer identification may be placed on the turbine; however, advertising signs of any kind are prohibited.
 - 5. Lighting: No illumination of the turbine or tower shall be allowed unless required by the federal aviation administration.
 - 6. Roof mounted WECS. Roof mounted WECSs are not permitted.

7. Tower. No climbing apparatus including foot pegs or rungs shall be within twelve feet (12') of the ground on a freestanding tower. No lattice towers are permitted.
8. Number. Not more than one (1) WECS shall be permitted per lot or parcel.
9. Distance. The minimum distance between the ground and any part of the rotor blade system shall be fifteen feet (15').
- E. Accessory Buildings and Support Equipment. Buildings and support equipment associated with towers shall be defined as accessory structures and must comply with section 18.26.020 of this title.
- F. Abandonment. If a WECS is not functional, operational, or maintained for a period of one (1) year, it shall be deemed abandoned. The owner, upon notification, shall immediately dismantle and remove the wind tower and associated appurtenances and restore the site.

Attachment "3" - Noise Chart



Source: Melville C. Branch & R. Dale Beland (1970), Environmental Protection Agency (1974)