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Overview of Issues Related to Placement of RERL SODAR at Fairhaven MA Tower Site

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This memo provides a summary of issues related to placement of the RERL SODAR for wind shear measurements at Fairhaven, MA, and an initial evaluation of the issues related to the placement of the SODAR at this site. The site is an area near a tower on which wind speed measurements have been made in the past.

General Issues Affecting SODAR Placement

Issues affecting the placement of the RERL SODAR at any given location include:

- Noise pollution - wind, waves, traffic or industry noise that decreases the amount of good data. Depending on the noise, this could be of no concern or a large problem
- Noise nuisance- neighbors who could be disturbed by the SODAR. Generally if houses are 500 m (1640 ft) from the SODAR there is no problem. In some cases 350 m may be acceptable. Problems may be solved with data collection at reduced volume or data collection only at certain times of the day (each of these reduces total number of good data points)
- Echoes – echoes from nearby objects that cause faulty measurements. Generally, if nearby obstacles are below 45 degrees over the horizon, as seen from the SODAR, this is no problem. This may be a problem near tall towers.
- Power – The availability of electricity may be a problem, but this is minor now that we are getting solar power supplies for both SODARs.
- Security – the SODAR could be an attractive nuisance and has a computer in it. Security may be provided by personnel at the site, fences or other security measures at the site and a fence around the SODAR itself.
- Level Surface or one that can be made level
- Staff to keep heater going (replace propane tank) in winter and to send data if that is appropriate. In the future we expect to have remote communication capability and staff will only be needed for keeping the heater going.
- Insurance or loan agreements
- Property issues – The property owner needs to provide permission for placing the SODAR. This may be an issue when trying to move the SODAR away from obstacles that might cause echoes, if that were to place the SODAR off of the property of the sponsor.

Fairhaven Site

Tower with anemometry: FCC license #1004503, 170 m tall, 41-38-15 N, 70-52-17 W
RERL Site visit 11/16/04

Fairhaven Site Description

This site is in a wooded area near a public works facility. It has a waste water treatment plant to the NW, conservation area land to the S and water to the E. Residents walk their dogs in the conservation area. A bicycle path follows an old railroad bed just N of the waste water treatment plant. Farther N is a highway and farther W are a shopping center, residential areas and streets with small businesses. Immediately to the W of the tower site is an old dirt road where the public works department stores culverts. The area is quite flat. A new narrow road (probably an extension to the bicycle path) not shown on the ortho-photo, but indicated by a white dotted line, goes between the tower and the public works repository for culverts.

The most likely SODAR location would be on the public works land, near the culverts. This location is farthest from all of the nearby houses, away from the tower (to avoid echoes) and not in the woods. On the other hand, there is not a lot of area available at this location that is not used by the DPW, so this would have to be discussed with the DPW. All of the nearby land is wooded. The site is also very near the narrow road.

Fairhaven Site Summary	
SODAR Location	On DPW land, off bike path
Sound Disturbance	Nearby houses and businesses < 500 m
Conflicting Land Uses	Nearby houses, river, conservation area
Security	Needs fence, jersey barriers
Power	?
Permissions	DPW cooperation for SODAR

Site Plan

- Operation at slightly reduced power might be feasible or daytime operation
- Place SODAR on town public works area with culverts. This places it away from guy wires, in open area and farthest from neighbors to E. SODAR would need jersey barrier protection, security fence and daily checks by local personnel
- Identify and resolve issues with conservation area and other uses (will SODAR noise bother walkers?)
- Talk to DPW about using land for SODAR and having them check on SODAR

Overall Evaluation

This site is possible but issues with permissions and security need to be resolved.

Fairhaven Ortho Photo

Photo of site:

500 m radii centered on likeliest SODAR site

Road/Bike Path – dotted white line

Houses indicated with yellow dashed ovals

Tower indicated with a red X



Fairhaven - Tower Photo from Path through Woods

