

Alaska Harbor Observation System Seward Prototype



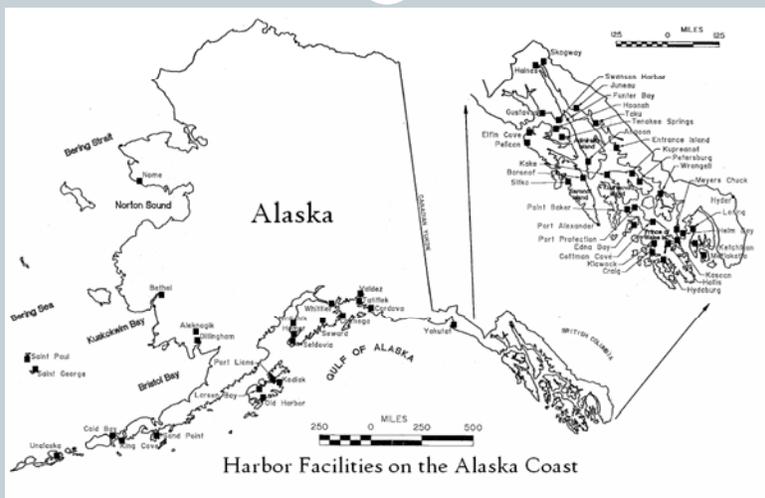
ORSON P. SMITH, PE, PH.D.

UAA UNIVERSITY of ALASKA ANCHORAGE



Centers of Coastal Development

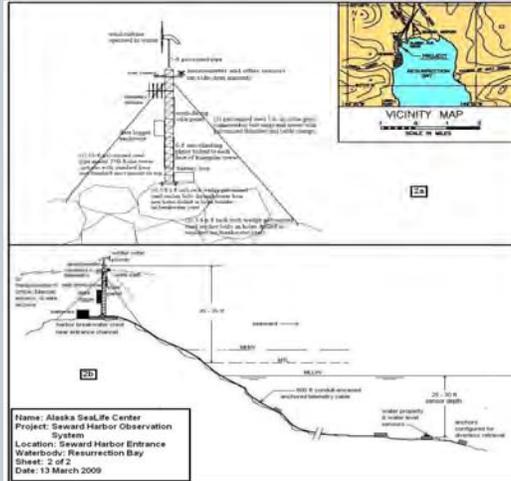
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Permits, Permissions, and Coordination

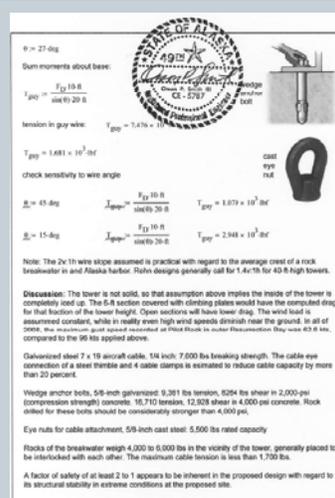
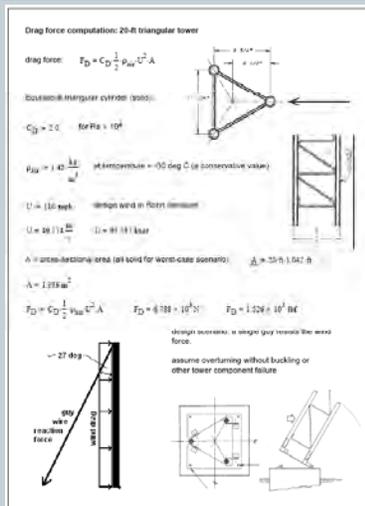
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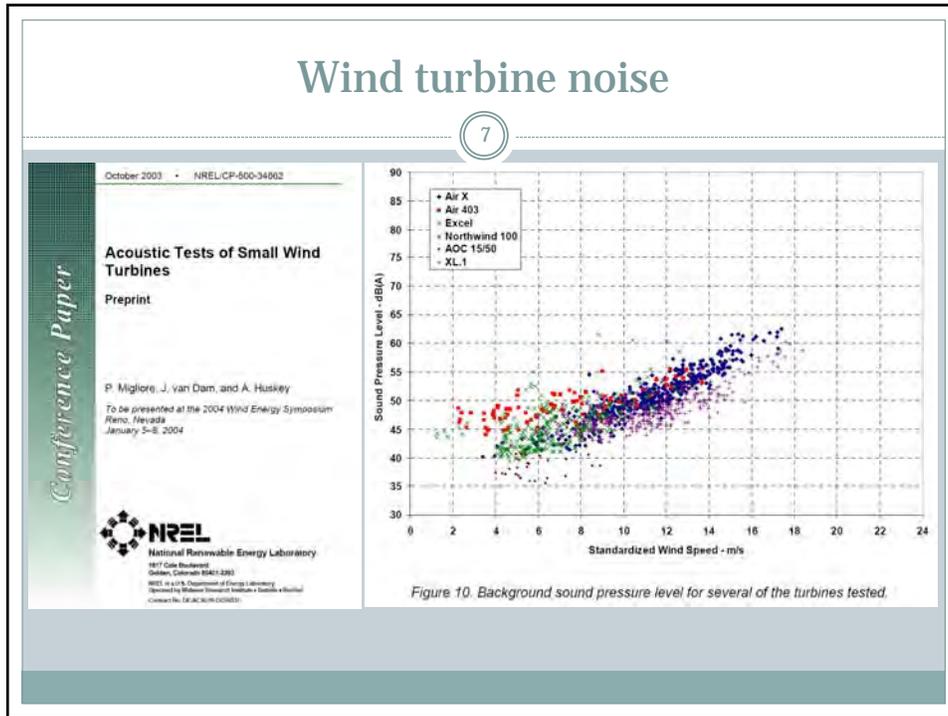
- Corps of Engineers
- ADNR Coastal Management
- City building permit
- Power and internet permissions at Harbor Office
- Coordinate with NOAA and USCG



Tower Guy Forces

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Wind Turbine

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airBREEZE

SMALL WIND. BIG ENERGY.

The most powerful wind generator in its class. The all-new Air Breeze. Quietest, most efficient, and precision engineered to deliver more energy at lower wind speeds than any other wind generator in its class. The Air Breeze is the latest generation of airB - with more than 100,000 watt at 120 locations in the world's most popular small wind generator.

- 3 year warranty
- High-tensile steel composite blades
- Magnetically based speed control regulator with peak power tracking
- Automatically slant-blade pitch settings
- Silentless synchronous alternator
- Maintenance-free - only two moving parts

ENERGY PERFORMANCE*

Technical Specifications

Wind Generator
 1000W (1000VA)
 12V (12.8V)

Height
 27' x 23' x 9' x 9'
 1000 (1000mm)

Blade
 1.8 m (5.9 ft)

Start-Up Wind Speed
 2.5 m/s (5.6 mph)

Rated Power
 1000W (1000VA)

Turbine Controller
 Magnetically based speed control regulator with peak power tracking

Blade
 1.8 m (5.9 ft)

Warranty
 3 year (limited warranty)

Manufacturer
 Air Breeze, Inc.
 10000 S. 17th Ave. #100
 Littleton, CO 80120

Small Wind Energy

1000W (1000VA) 12V (12.8V)

27' x 23' x 9' x 9' 1000 (1000mm)

1.8 m (5.9 ft)

2.5 m/s (5.6 mph)

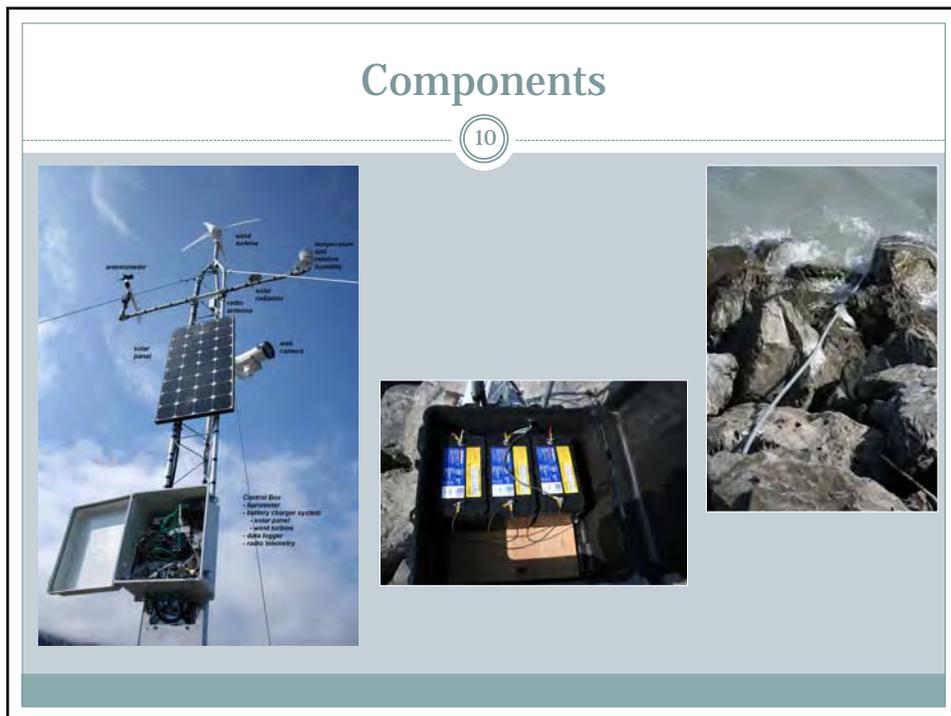
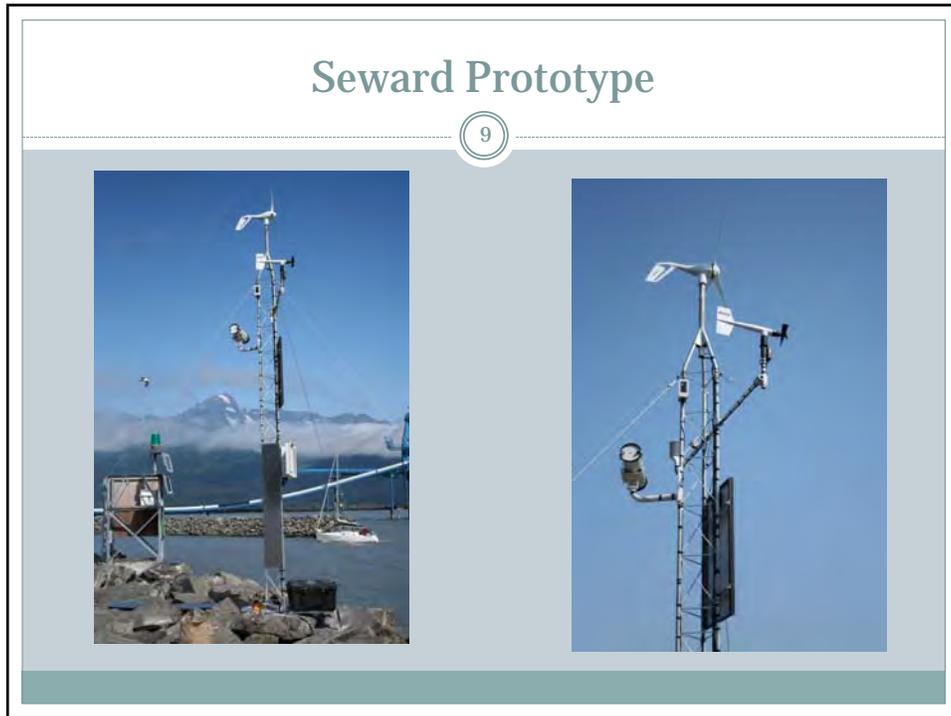
1000W (1000VA)

Magnetically based speed control regulator with peak power tracking

1.8 m (5.9 ft)

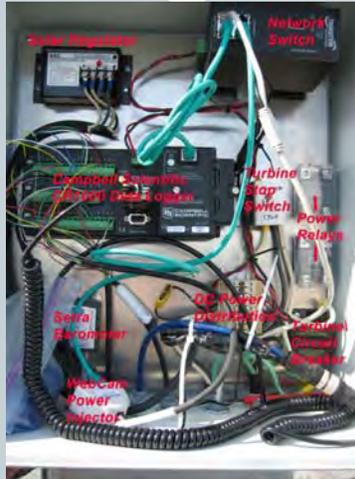
3 year (limited warranty)

Air Breeze, Inc.
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Control Box on Tower

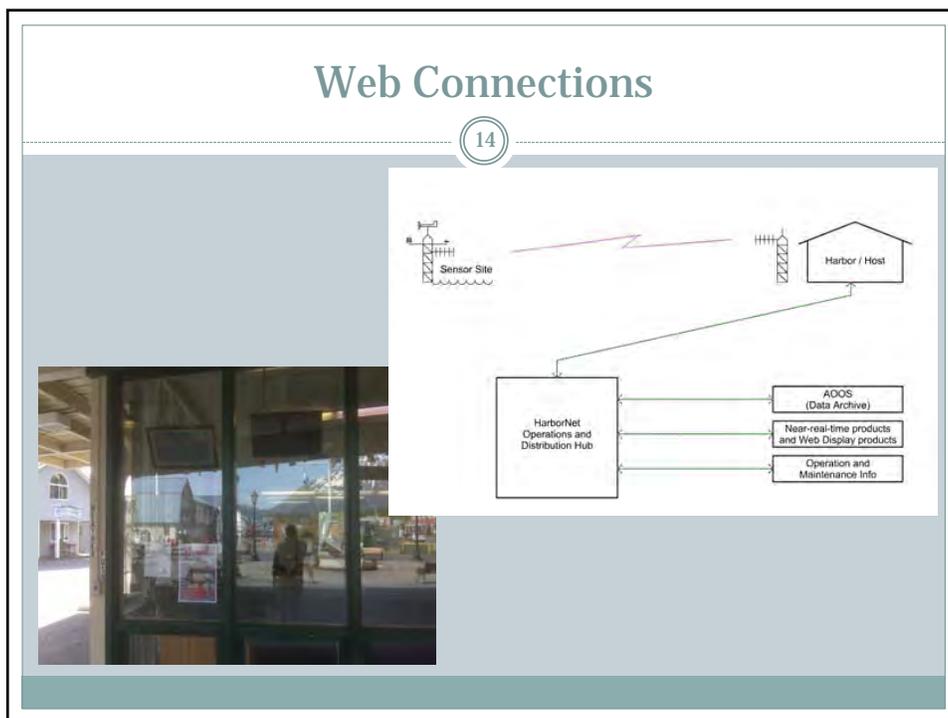
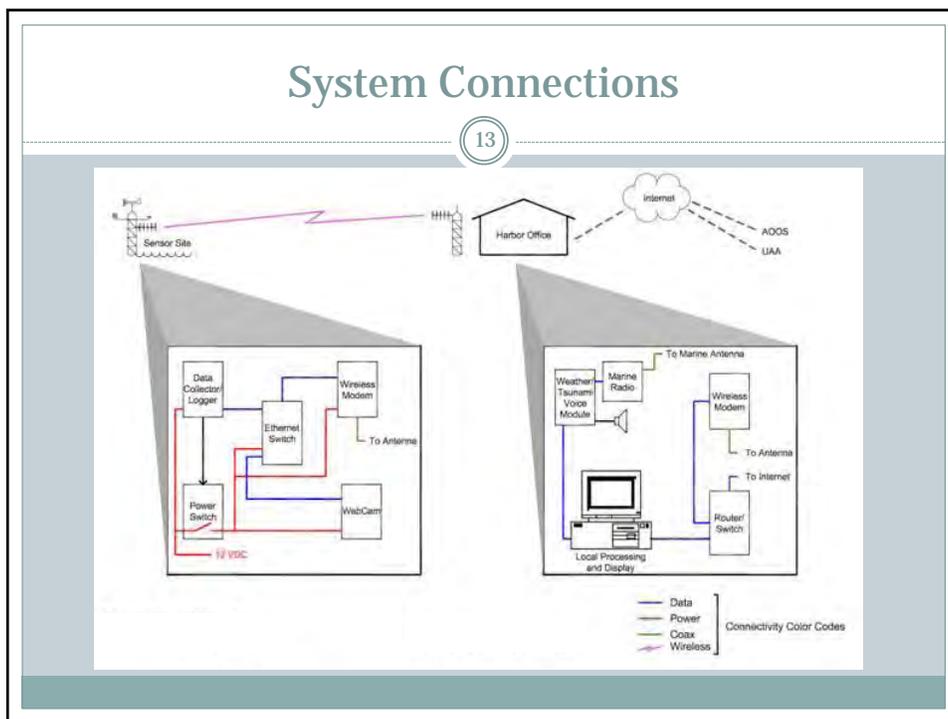
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Pressure sensor anchors

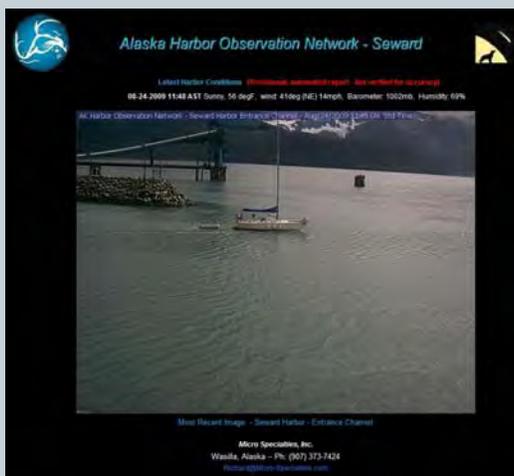
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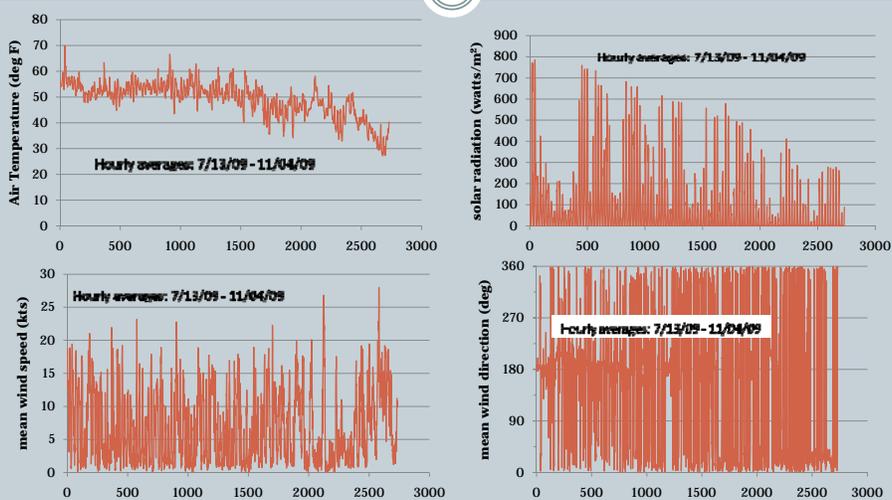
<http://akharborobs.net/Seward/>

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Data Archives

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Sensor & Data Logger Cost

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Sensor	Cost
Anemometer	\$1,475
Barometer	610
Solar radiation	465
Air temperature & relative humidity	945
Pressure, water temperature & conductivity	5,850
Web camera, housing, and mount	1,600
Data logger	1,800
Instrument enclosure	<u>350</u>
Subtotal	\$11,945

Cost of tower, enclosures, batteries, & telemetry

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Component	Cost
Tower and guys	\$1,770
Solar panel and regulator	810
Wind turbine	1,030
Batteries, enclosure, cabling	<u>1,270</u>
Subtotal	\$4,880
Telemetry routers, switches, antennae	\$2,700

Station Cost Summary

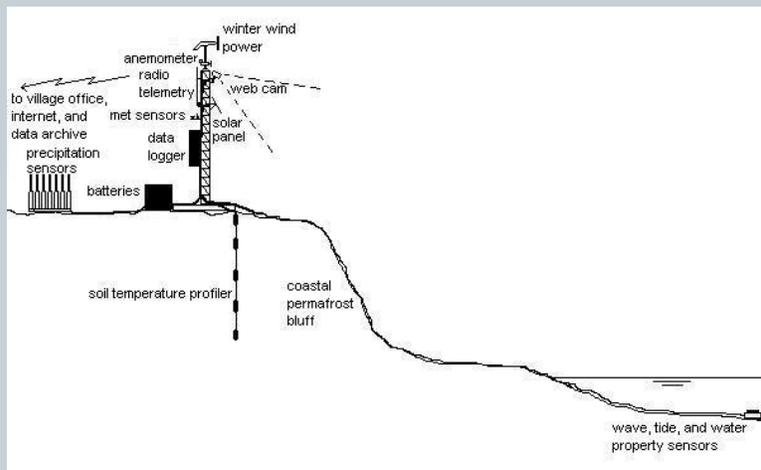
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Hardware System	Cost
Sensors	\$12,000
Tower, wind turbine, solar panel	5,000
Telemetry	<u>3,000</u>
Hardware subtotal	\$20,000
Installation, electronics contract	5,000
Ordinary annual maintenance	<u>4,000</u>
Electronics contract subtotal	\$9,000
Grant administration, insurance (ASLC)	7,000
Site design and programming (UAA)	4,000
Permit applications (ASLC & UAA)	4,000
Design and administration subtotal	<u>15,000</u>
Total station cost	\$44,000

- ### Alaska Harbor Observation Network
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- **Administered by Alaska SeaLife Center**
 - In partnership with UAA School of Engineering
 - **Managed by AOOS**
 - **Oversight by Alaska Harbor Observation Network Advisory Council**
 - NOAA: NWS, NDBC...
 - Alaska Harbormasters
 - Alaska Department of Natural Resources (Coastal Management Program)
 - Alaska Department of Transportation and Public Facilities
 - US Army Corps of Engineers

Remote Coastal Observation Station

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Coastal Observers

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- **Manual observations reported via Internet**
 - Beach form, position, sediment character
 - Wind speed and direction; air temperature
 - Wave height, period, and direction
 - Longshore current speed
 - Digital photo
 - Water quality
 - Ice characteristics

