

Homer Tidal Energy Incubator Project

Testing tidal technology for Alaska
Renewable energy & jobs for Homer

Partners

- City of Homer
- Kenai Peninsula Borough
- State of Alaska
 - University of Alaska
 - Office of Representative Paul Seaton
 - Office of Senator Peter Micciche
 - Alaska Industrial Development and Export Authority
 - Alaska Department of Fish & Game
- Homer Electric Association
- NOAA Kasitsna Bay Laboratory
- National Renewable Energy Laboratory
- Kachemak Bay Research Reserve (KBRR)
- Ocean Renewable Power Company (ORPC)
- Renewable Energy Alaska Project (REAP)

Workgroup progress

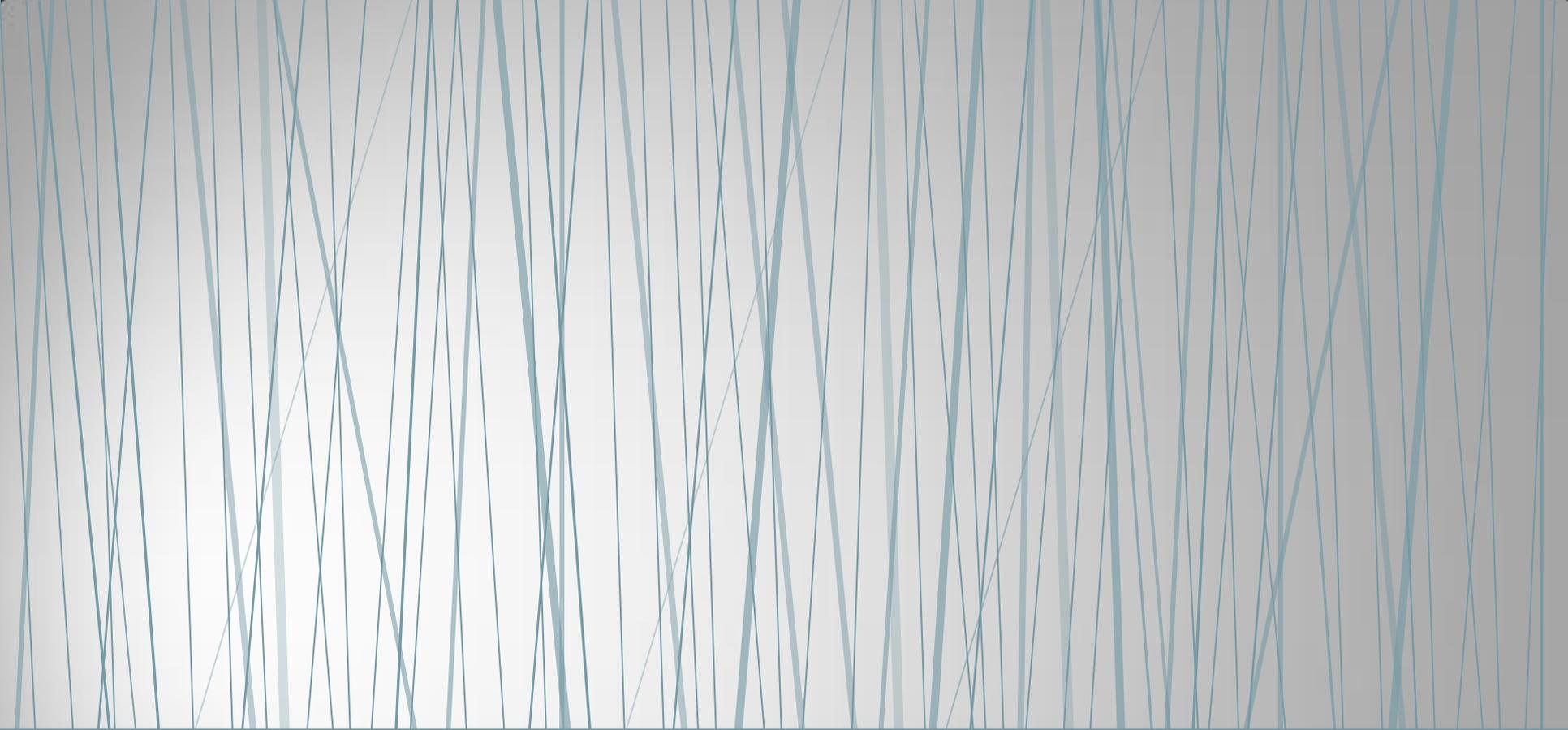
- 2012-13 – regular meetings in Homer with representation from City, Borough, State, and Federal agencies, industry & individuals.
- 2012 – \$100,000 economic development grant from City of Homer to support testing and marketing
- 2012 – University of Alaska graduate students present report on senior engineering design project
- 2013 – Phase One testing begins
- 2013 – Work continues on site characterization

Homer Deep Water Dock

Why Kachemak Bay?

- Strong tidal currents
- Dock infrastructure
- Existing data
- Partners



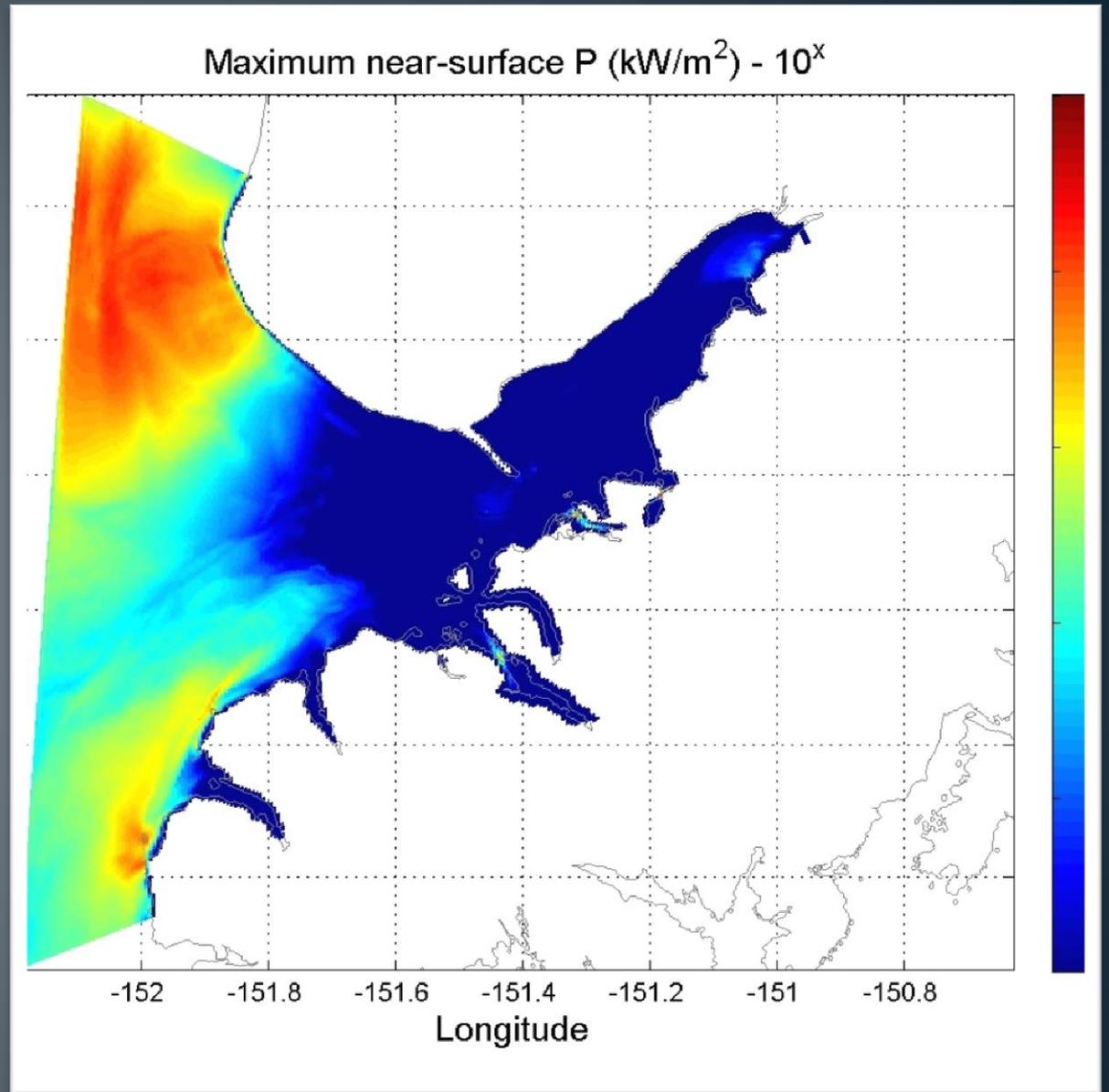


Site Characterization

What makes Kachemak Bay an ideal place for a test station.

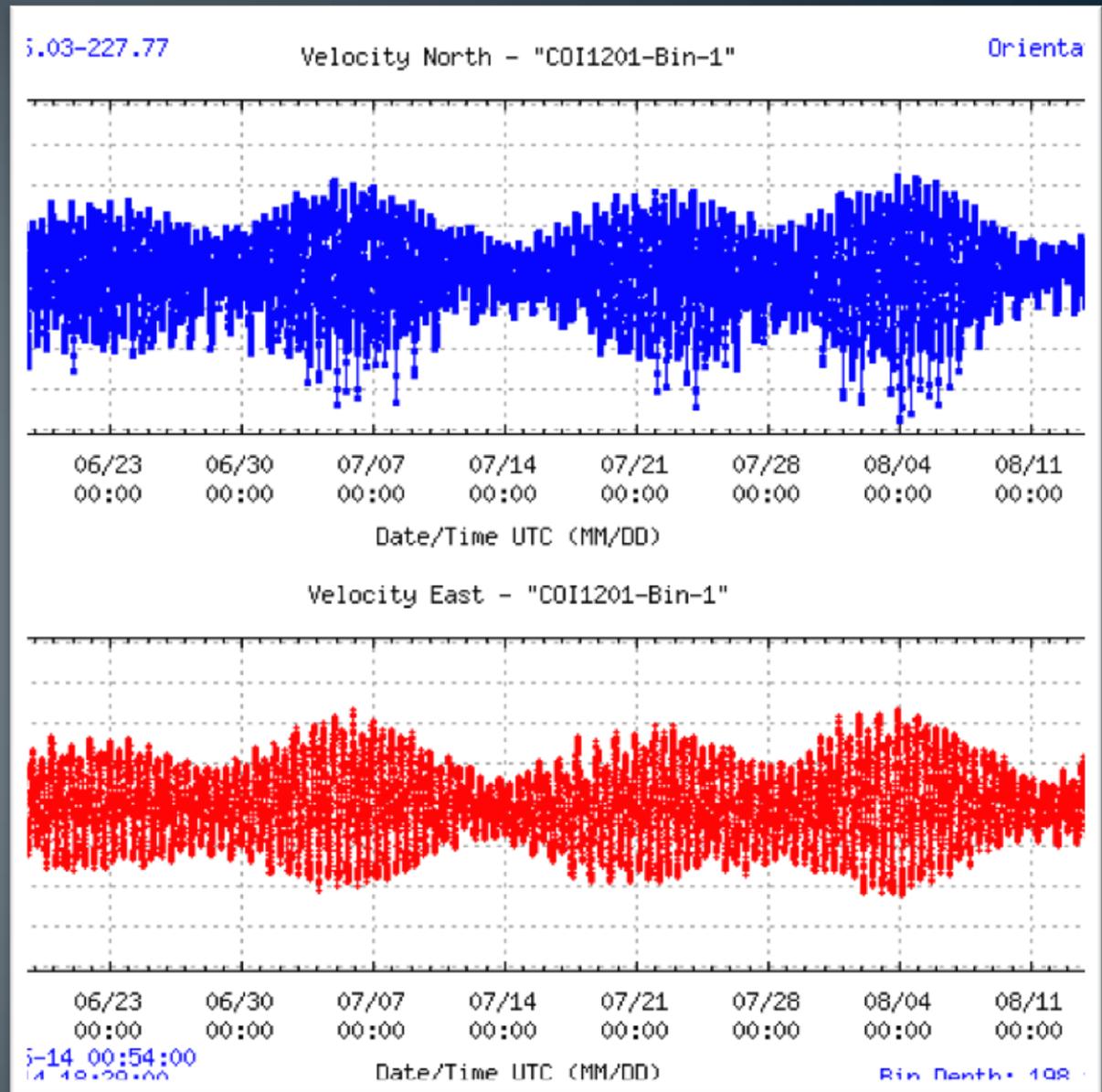
Strong Tidal Currents

Tidal power density from near-surface currents.
July 2012 simulation from NOAA circulation model



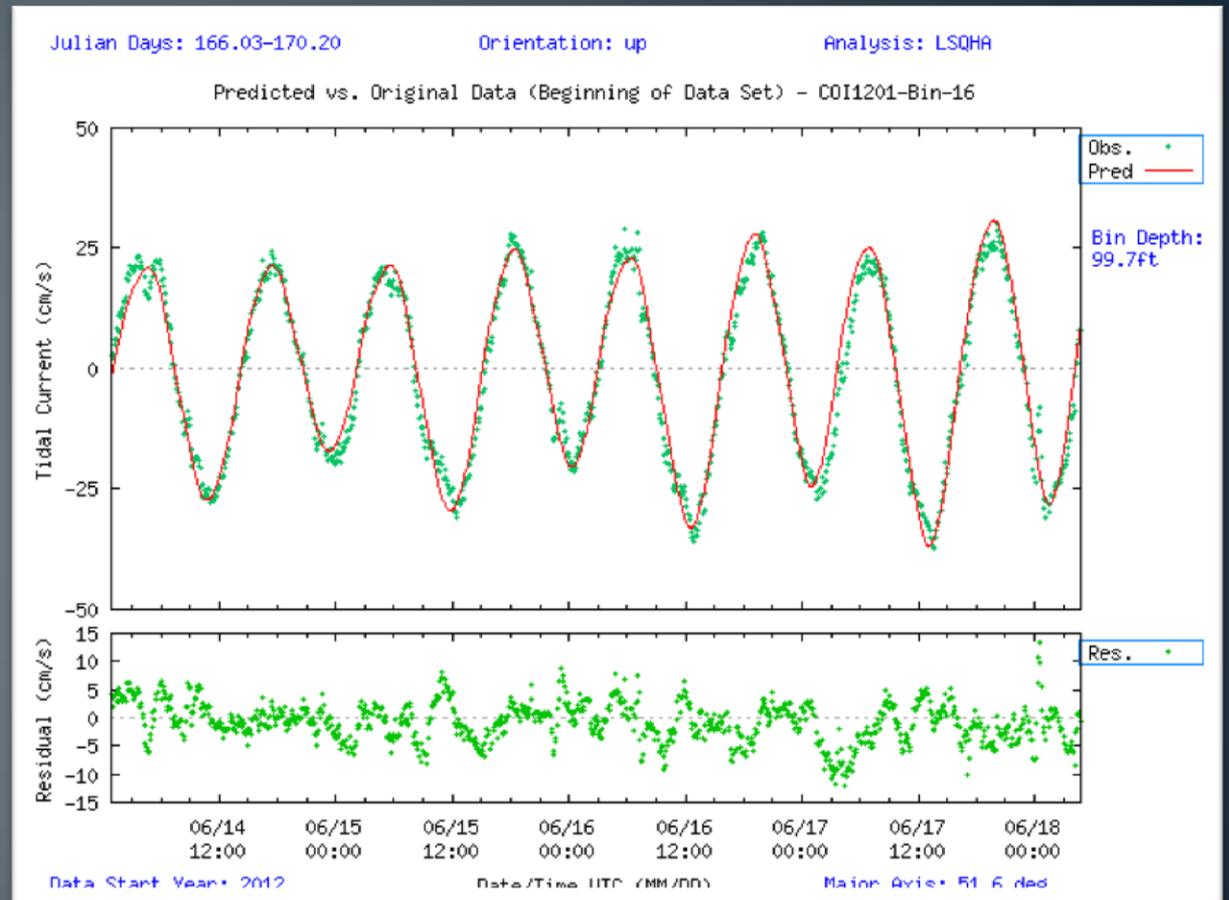
Current Measurements

Jun-Aug 2012 NOAA current measurements near end of Homer Spit. North-south (blue) and East-west (red) velocity.



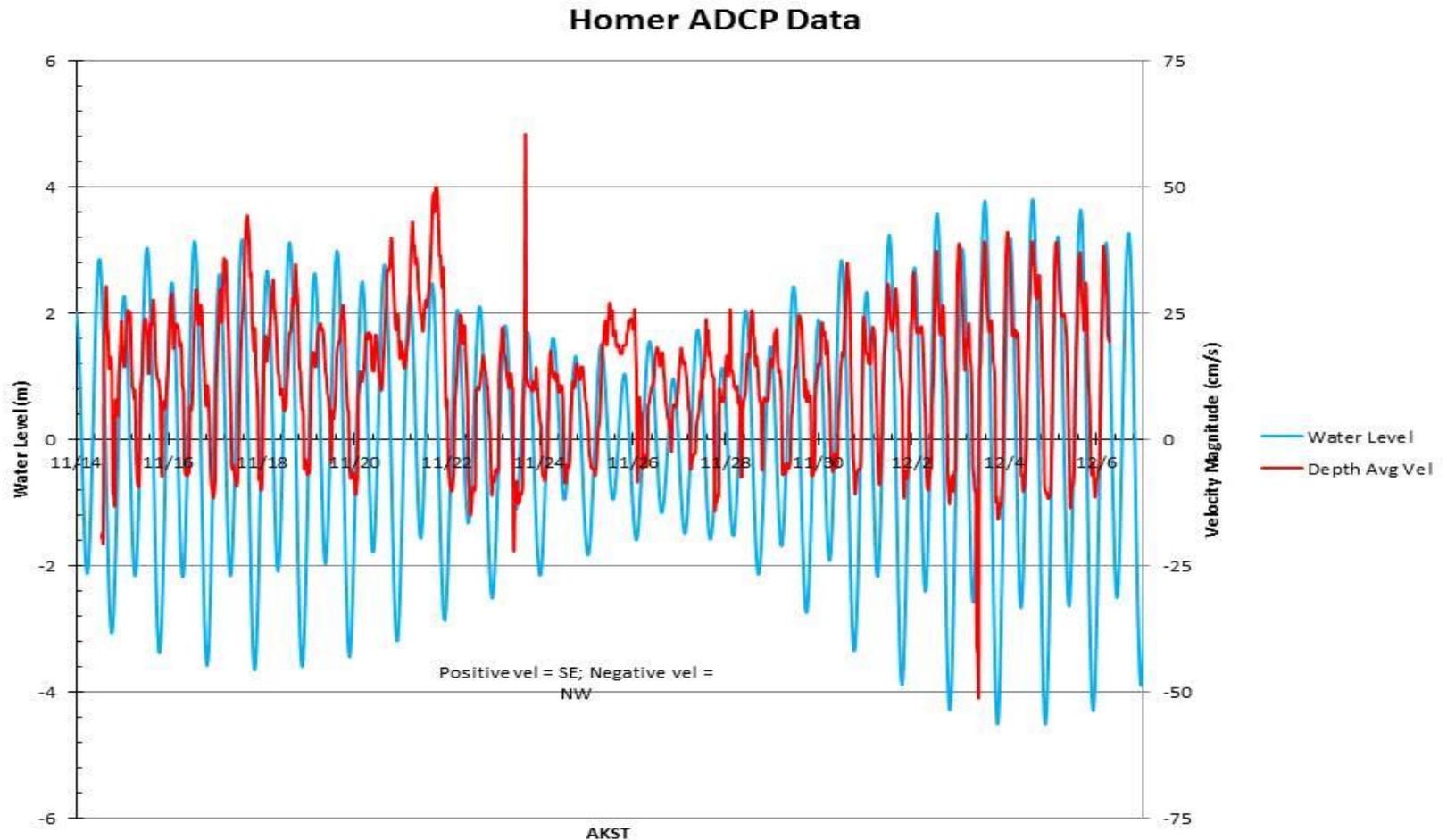
Current Measurements

Predicted (red line) vs observed (green dots) tidal currents in Jun 2013. At NOAA current meter station near Homer Spit.



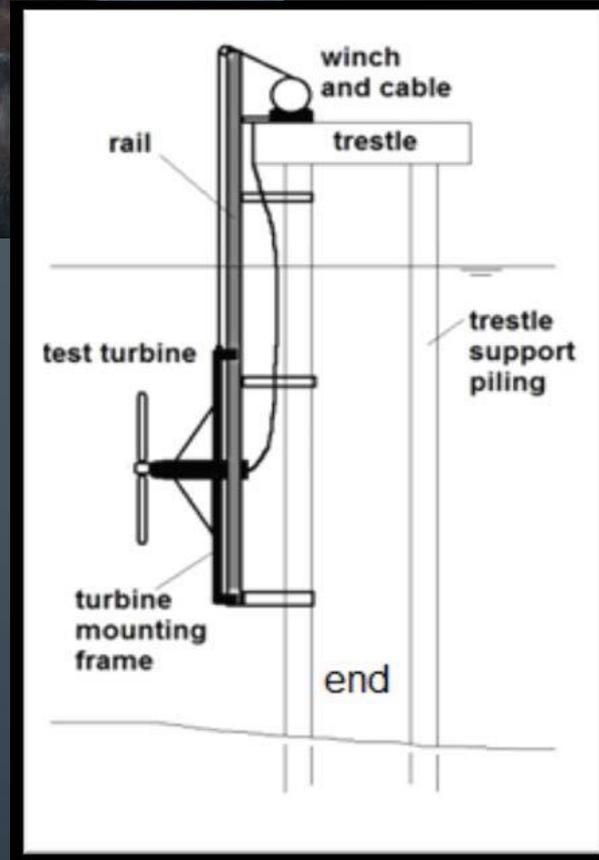
Homer ADCP data collected November-December 2013 by University of Alaska

Peak depth-averaged velocities are about 0.5 m/s or about 1.6 ft/sec.



Existing Infrastructure

- Deep water dock
- Road system
- Access to grid



Existing expertise

Science agencies

Marine trades

University



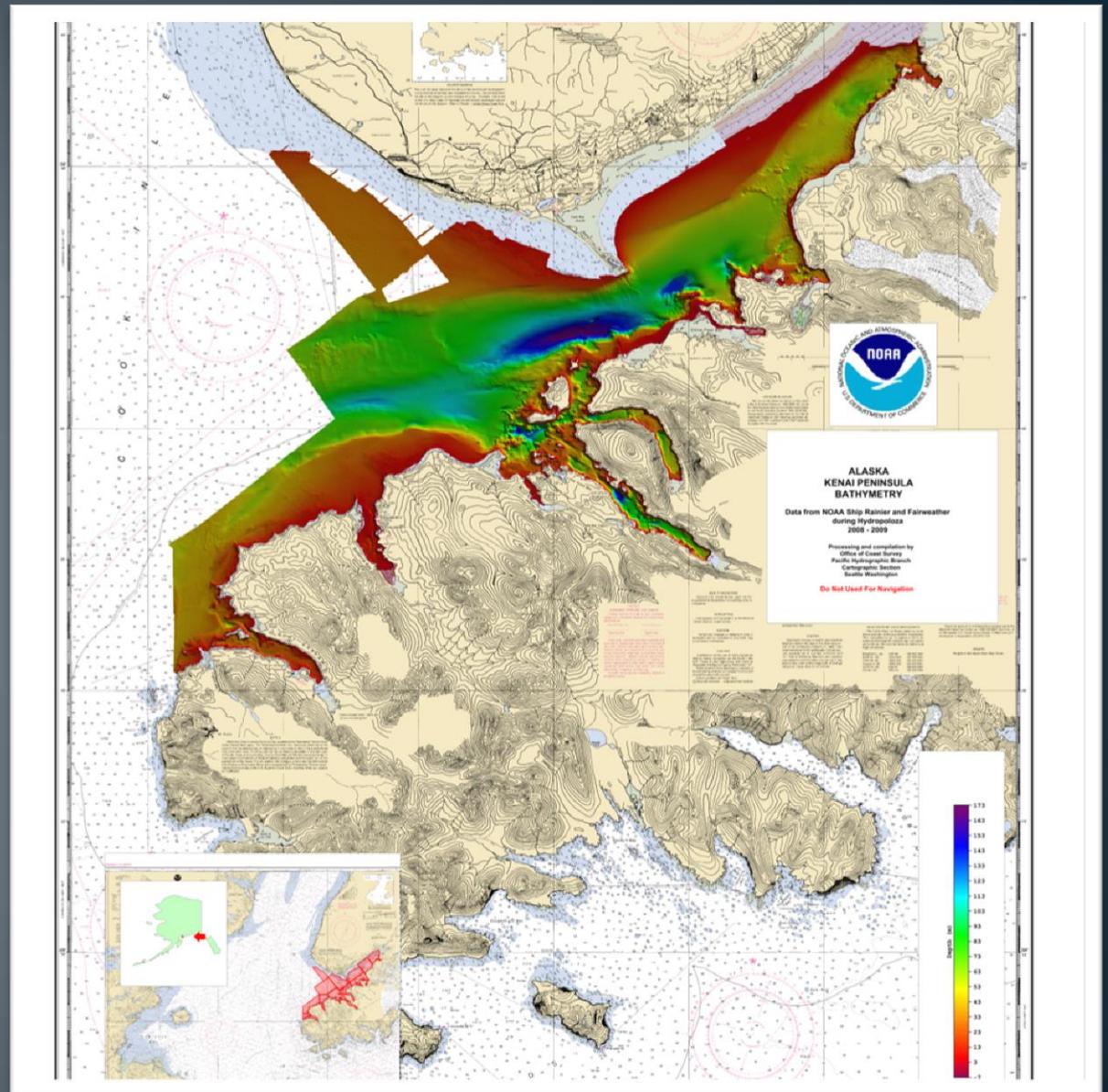
Data already collected

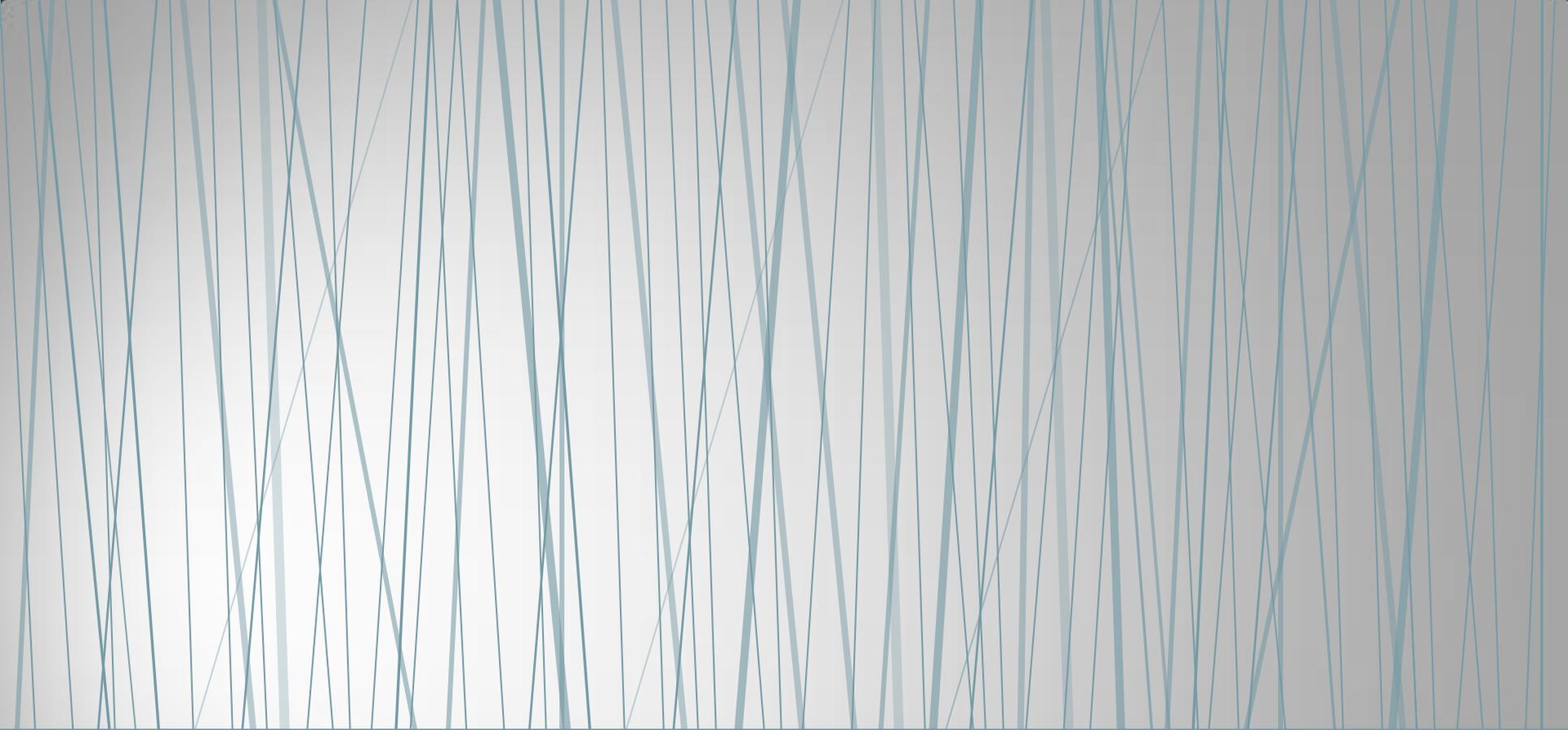
Currents

Current Model

Biology

Habitat





Homer Tidal Energy Incubator Project

Assessing feasibility of a testing site for tidal industry and research.

Test Bed

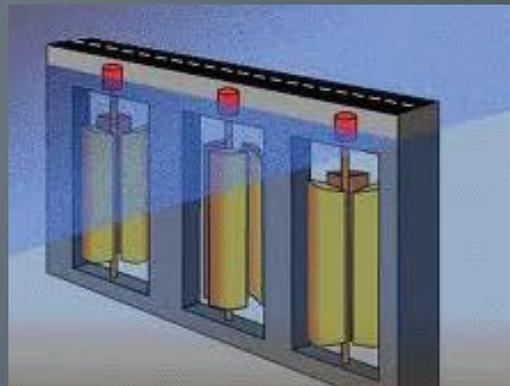
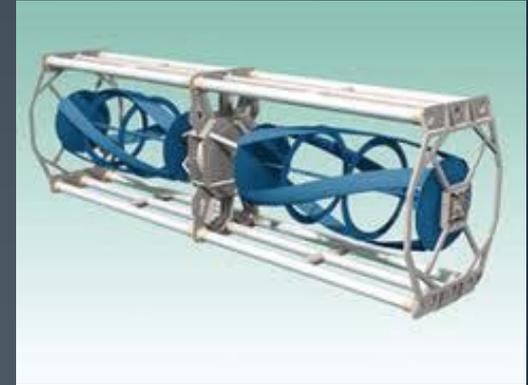
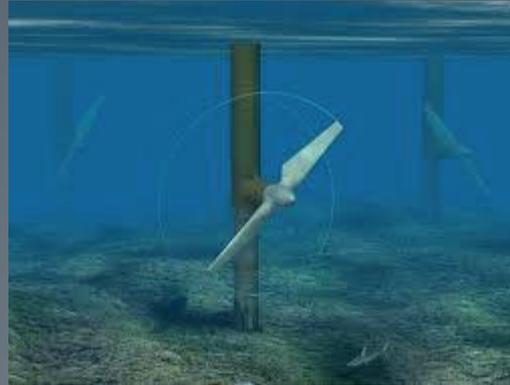
Turbine Designs

Camera systems

Fish interaction

Icing/Siltation

Anchoring systems



Community

Benefit

Economic Development

Education

Power

Hi-tech industry



Energy!

Model for coastal communities

Support the growth of the high tech sector in Homer

Community Economic Development Strategy (CEDS)

On mission with City's goal to support the growth of the high tech sector in Homer as well as Education and Marine Trades goals.

GOAL: Support Growth of High Tech/Internet Businesses

Market Homer's quality of life factors and **suitability for high-tech/Internet-based** operations.

GOAL: Promote growth and vitality of the **marine trades as an economic cluster in Homer.**

GOAL: Enhance economic development in Homer through the **education sector.**

Support expansion of educational programs to **take advantage of emerging economic opportunities** and/or to capitalize on Homer's existing strengths and assets, such as interest in sustainability, **proximity to ocean resources**, and arts/culture.

Education

UAA Senior engineering
design project
Outreach facility
Partner programs
Contests



Photo credit: Michael Armstrong, Homer News

Partners

City, Borough, State,
Federal, Industry,
Nonprofit, Individuals



Next steps

Finish site
characterization

Begin market analysis

