

# Martha's Vineyard Coastal Conference

## Waves and Tides The Other Renewable Energy



**CAPE COD**  
BLUE ECONOMY PROJECT



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# Why Wave/Tidal?

Export - #1 Massachusetts Resource is Intellectual Capital

Intermittency – Grid Needs Diversity of Sources

Predictability – Reduces Need for Backup

	Resource			Utilization Percent	Predict Time
	World	US	NE		
Demand	20,000	4000	120		Hours
Wind	5,000	900	400	20-50%	Hours
Wave	11,000	260	24	30-40%	Days
Tidal	450	100	2	20-35%	Centuries

# Wave

## Multiple Technology Approaches



Point Absorber



Others



Oscillating Water Column

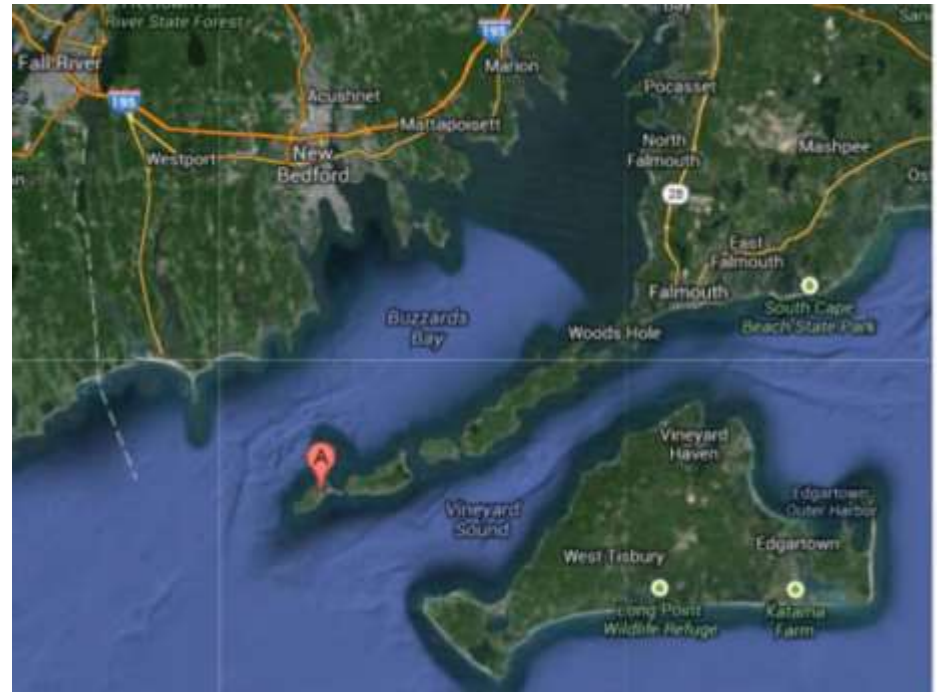


# Waves in Massachusetts

- Island and Off-grid Villages Need Power ‘System’

Cuttyhunk

Diesel Generators  
Off grid – No FERC  
Solar/Batteries



- Wind Turbine Add-ons
- Wave Farms

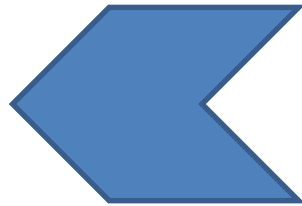
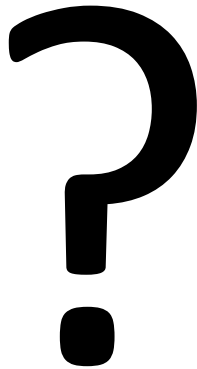
# Tidal Energy

Motion – Kinetic

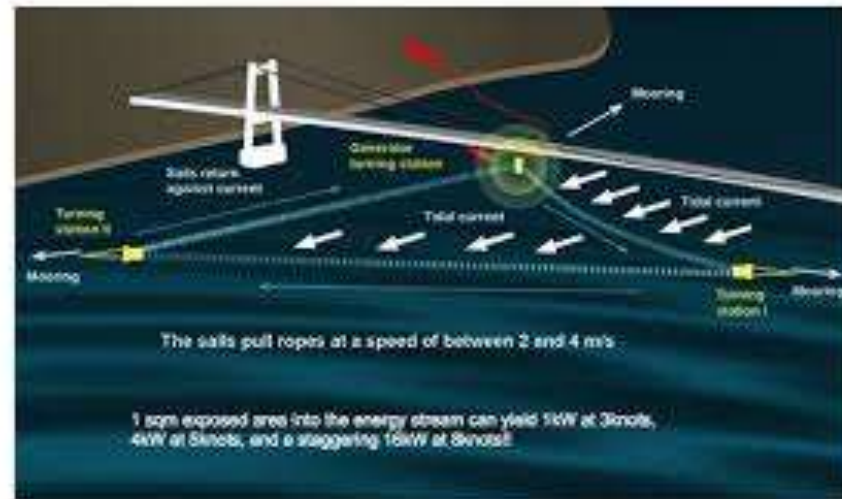
MHK – Marine HydroKinetic



# Alternatives?

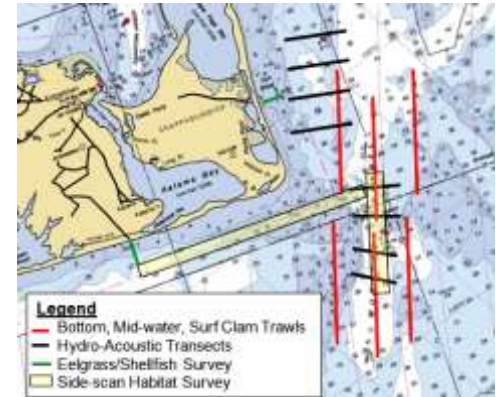


# Alternatives?



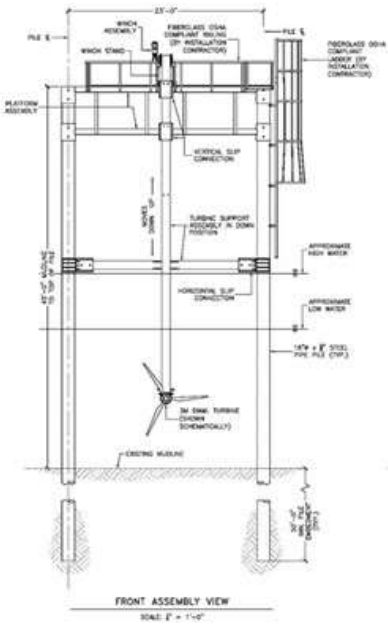
# Muskeget Tidal Development

- Up to 20 MW of Highly Predictable Power
  - Few other users; Minimal resistance
  - Potential for Other Sites
- 10 year project with Edgartown
  - Over \$2 million for surveys under 2 Preliminary Permits
  - Edgartown rights revoked for lack of progress
    - Two studies remaining (Fish and Archeology) - \$300,000
    - Seeking pilot - 5 years to Install 5 MW
- Phase I of Feasibility Study completed
  - Site marginal by current technology – 2 m/s
  - Feasibility dependent on new technology for low resource





# Bourne Tidal Test Site

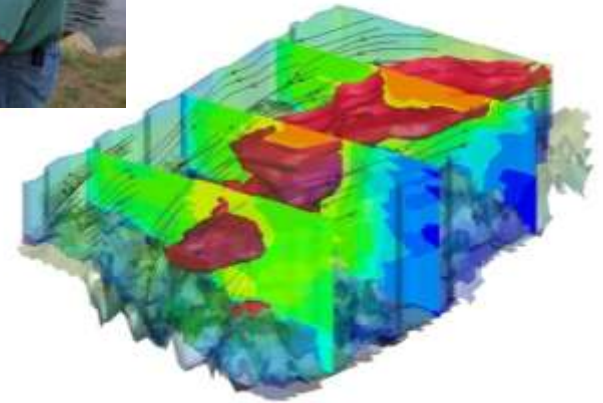


# Bourne Tidal Test Site

- Surveys
  - Acoustic survey
  - Environmental assessment



Cape Cod Canal Tidal Turbine Test Site  
2016/06/28  
14:00  
East Flow Direction



# Educational Activities

- Education and Stakeholder Progress
  - STEM Programs in 5 Conferences; 3000 students/parents
  - Presentations at 6 Industry Conferences; 1000 people
  - Lesson Plan for Tidal Energy distributed in STEM network
  - Demonstrations and Projects in area schools
  - Stake Holder Outreach in media including NPR and Sea Technology
  - Employed 4 Interns from 3 Universities
- <https://chuffed.org/project/ocean-energy-for-new-england>
  - \$10      One student materials
  - \$100     One class materials
  - \$250     Intern salary for one week
  - \$1000    One project on BTTS
  - \$2500    Intern for 10 Weeks