

# Wave Energy in Oregon - Planning Our Way to Success

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Promoting Responsible Development of Ocean Energy

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## The Technologies

- Diversity: power take off, siting, size



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KM1

## Oregon Wave Energy Trust (OWET)

- ▶ Nonprofit public-private partnership funded by the State.
- ▶ Mission: to support the responsible development of wave energy in Oregon
- ▶ Vision: to create and attract an ocean energy industry in Oregon that leads to a significant addition to the state's economy, creating family wage jobs, and increasing our per capita income



## Oregon Wave Resource and Infrastructure

- ▶ Best wave resource in continental United States - EPRI
- ▶ Existing sub-stations capacity able to absorb ~430 MW
- ▶ Grid infrastructure available
- ▶ Close to load and increasing coastal population
- ▶ World-class academic support – OSU/NNMREC
- ▶ Manufacturing, transportation, deployment
- ▶ Supportive Policies



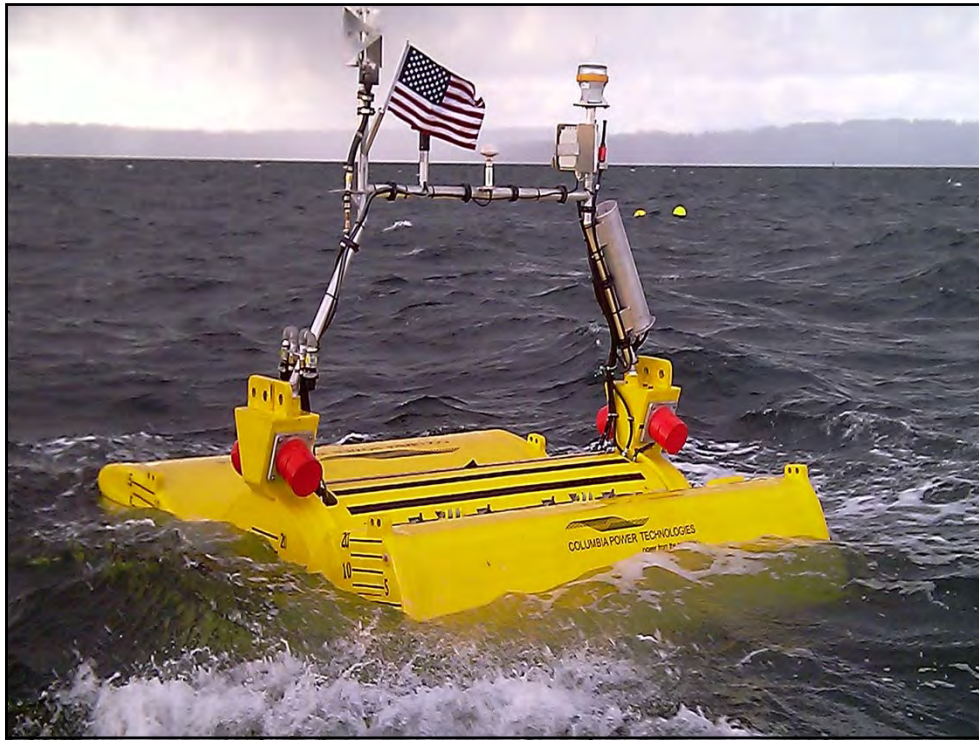
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Supports

Kelsey McAlpine, 10/12/2010

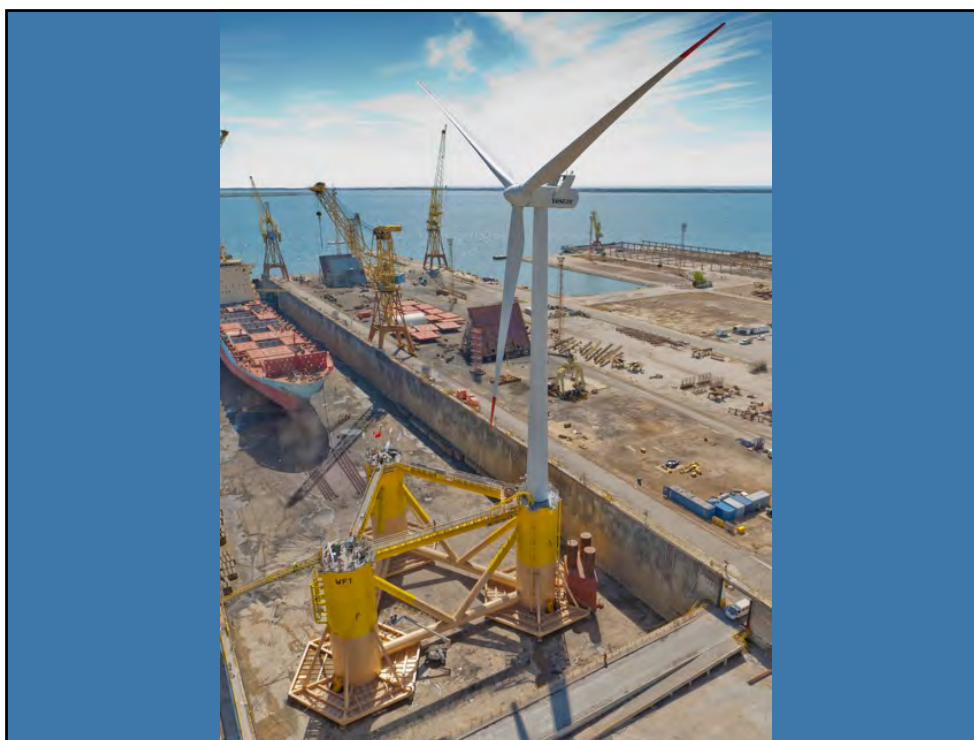










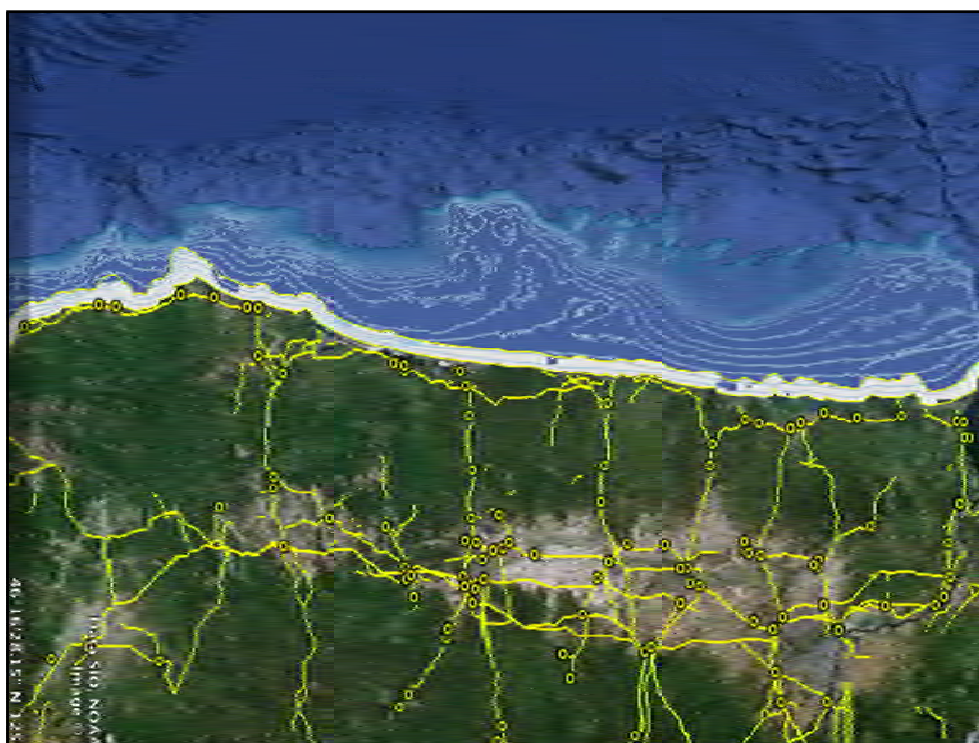
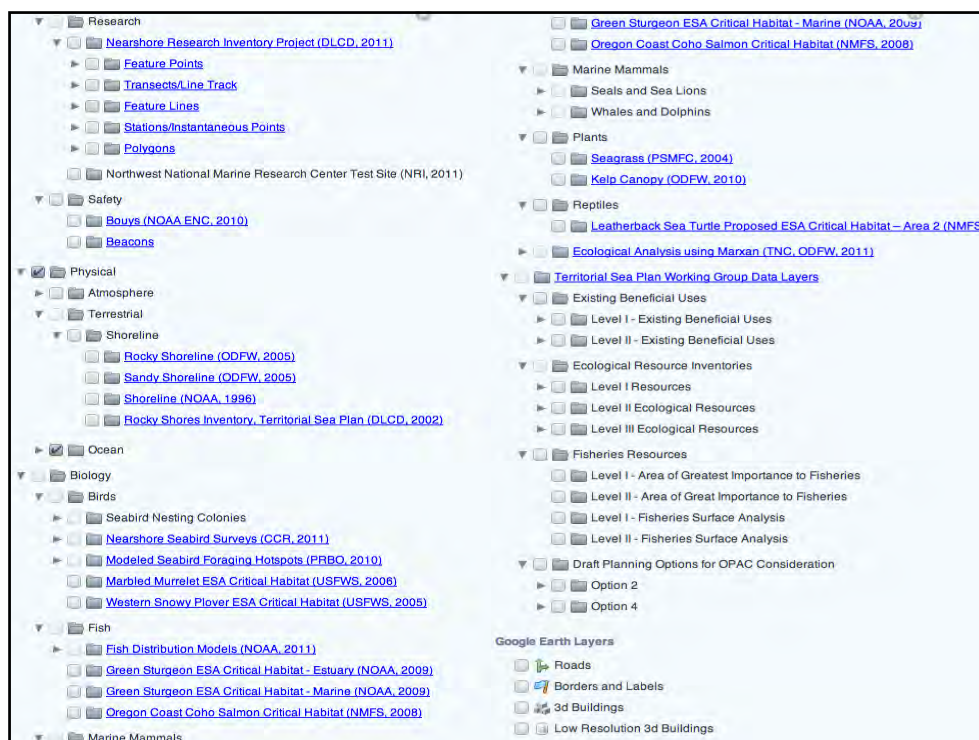


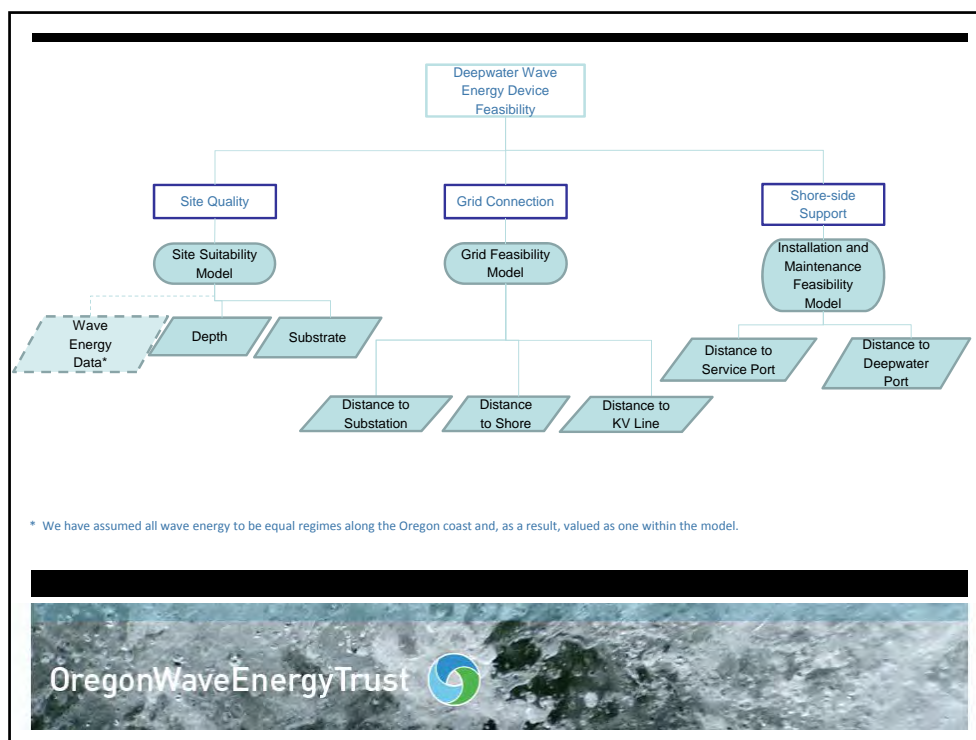
**Data Layers**

Oregon


- ▼ ☒ Human
  - ▼ ☒ Boundaries
    - ☐ Graticules
    - ☒ Oregon Territorial Sea (DLCD, 2008)
    - ☐ West Coast Exclusive Economic Zone (PFMC, 2010)
    - ☐ U.S. Maritime Zones/Boundaries (NOAA, 2011)
    - ☐ Nautical Charts
    - ☐ Viewpoints
    - ☐ Viewsheds
  - ▼ ☒ Economy
    - ▼ ☒ Marine Industry
      - ☐ Shoreside Economic Study
      - ☐ Fishing Ground Maps
      - ☐ Pacific Fisheries Management Council
      - ☒ Marine Renewable Energy Sector
    - ☐ Marine Recreation and Tourism
  - ▼ ☒ Infrastructure
    - ☐ Telecommunication Cables (OFCC, 2005)
    - ☐ Ocean Observatories Initiative Cable Locations (NRI, 2011)
    - ☐ Coastal Discharge Permitted Sites (DEQ, 2008)
    - ☐ Commercial Shipping Lanes (NOAA, 2011)
    - ☐ Towlane Agreement (WA Sea Grant, 2007)
    - ☐ Dredge Material Disposal Site (ACOE, 2011)
    - ☐ Airports
    - ☐ Railroads
    - ☐ Marina locations
    - ☐ Bait and Tackle Stores
    - ☐ Marine Supply Stores
    - ☐ Maritime Businesses
    - ☐ Non-Consumptive Recreational Businesses
- ☐ Non-Consumptive Recreational Businesses
- ☐ Port Locations
- ☐ Charter Fishing Businesses
- ☐ Research Institutions
- ☐ Seafood Processors
- ☒ Electrical Transmission Lines (USGS)
- ☒ Electrical Substations (BPA)
- ☒ Electrical Transmission Lines (BPA)
- ▼ ☒ Management
  - ☐ Oregon Marine Spatial Planning Grid (DLCD, 2009)
  - ☐ Protected Areas Ownership (TNC, 2005)
  - ☐ State Parks (OPRD, 2008)
  - ☒ Wave Energy Preliminary Permit Sites (FERC, 2009)
  - ▼ ☐ Groundfish Area Closures
    - ☐ Rockfish Conservation Areas (GCA\_RCA)
      - ☐ Trawl RCA Period 5 (2009)
      - ☐ Trawl RCA Period 4 (2009)
      - ☐ Nonrawl RCA
      - ☐ Nongroundfish Trawl RCA (2009)
    - ☐ Cowcod Conservation Areas (GCA\_nonRCA)
      - ☐ Cowcod Conservation Areas
      - ☐ EFH Conservation Areas
    - ☐ Groundfish RCA Boundary Lines
      - ☐ RCA Latitude Boundaries
      - ☐ Trawl RCA (Period 5, 2010)
      - ☐ Trawl RCA (Period 6, 2010)
  - ▼ ☐ State Designated Marine Managed Areas (ODFW, 2011)
    - ☒ Research Reserves (ODFW)
    - ☒ Marine Gardens (ODFW)
    - ☒ Habitat Refuge (ODFW)
  - ☐ Marine Reserves and Protected Areas (ODFW, 2011)
- ▼ ☐ Research







	Ref.	Classification	Score
Depth:	1	0m < 10m	0
	2	10m < 20m	0
	3	20m < 30m	0
	4	30m < 40m	2
	5	40m < 50 m	5
	6	50m < 75m	10
	7	75m < 85m	8
	8	85m < 100m	4
	9	100m < 200m	3
	10	>200m	1

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### Bottom Type:

Ref.	Classification	Score
1	<b>Rock</b>	<b>2</b>
2	<b>Shell</b>	<b>5</b>
3	<b>Gravel</b>	<b>5</b>
4	<b>Sand</b>	<b>10</b>
5	<b>Cobble</b>	<b>0</b>
6	<b>Mud</b>	<b>10</b>

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### Distance from substations:

Ref.	Classification	Score
1	<b>&lt;5 NM</b>	<b>10</b>
2	<b>6 NM &lt; 12 NM</b>	<b>5</b>
3	<b>&gt;12 NM</b>	<b>1</b>

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## Distance from shore:

Ref.	Classification	Score
1	<1 NM	10
2	1 NM < 2 NM	9
3	2NM < 3 NM	8
4	3 NM < 4 NM	4
5	4 NM < 5 NM	3
6	5 NM < 6 NM	1
7	>6 NM	0

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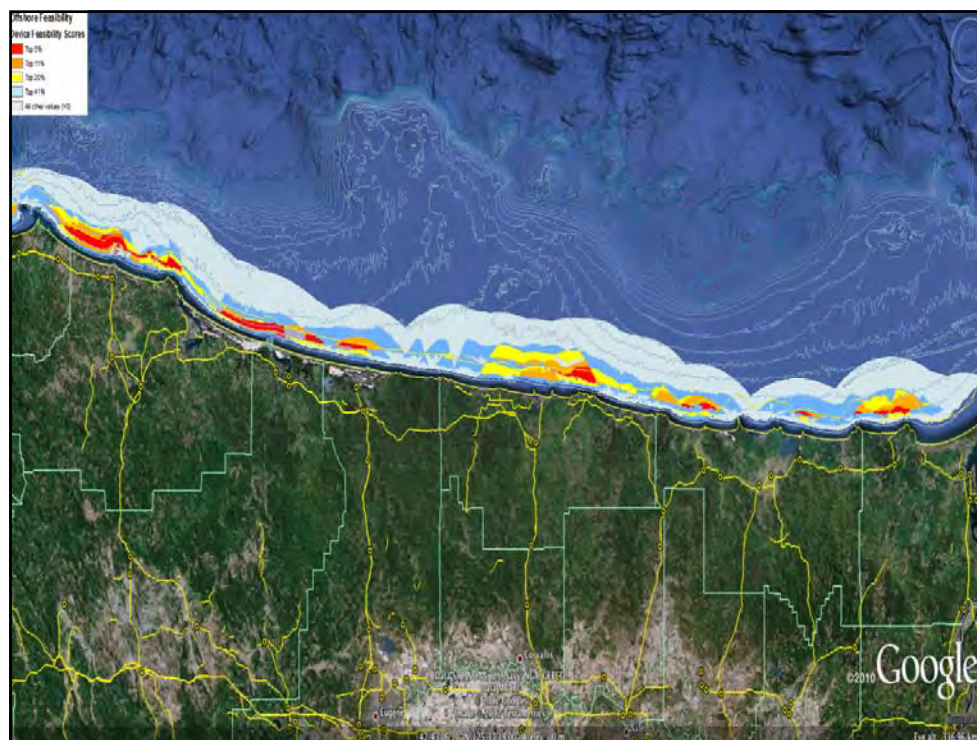
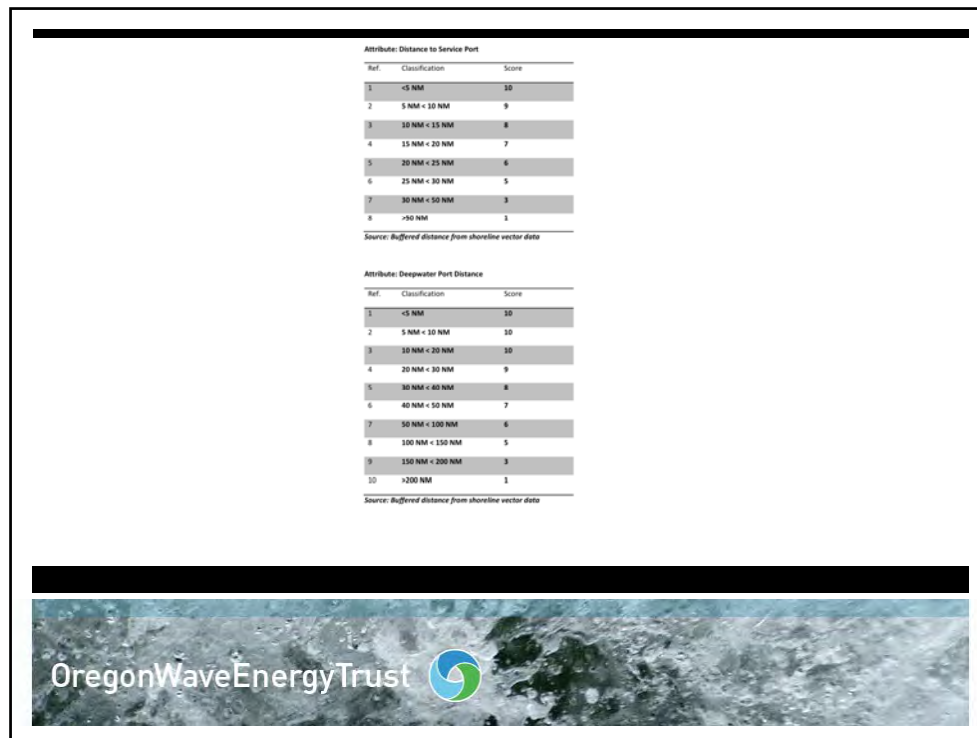


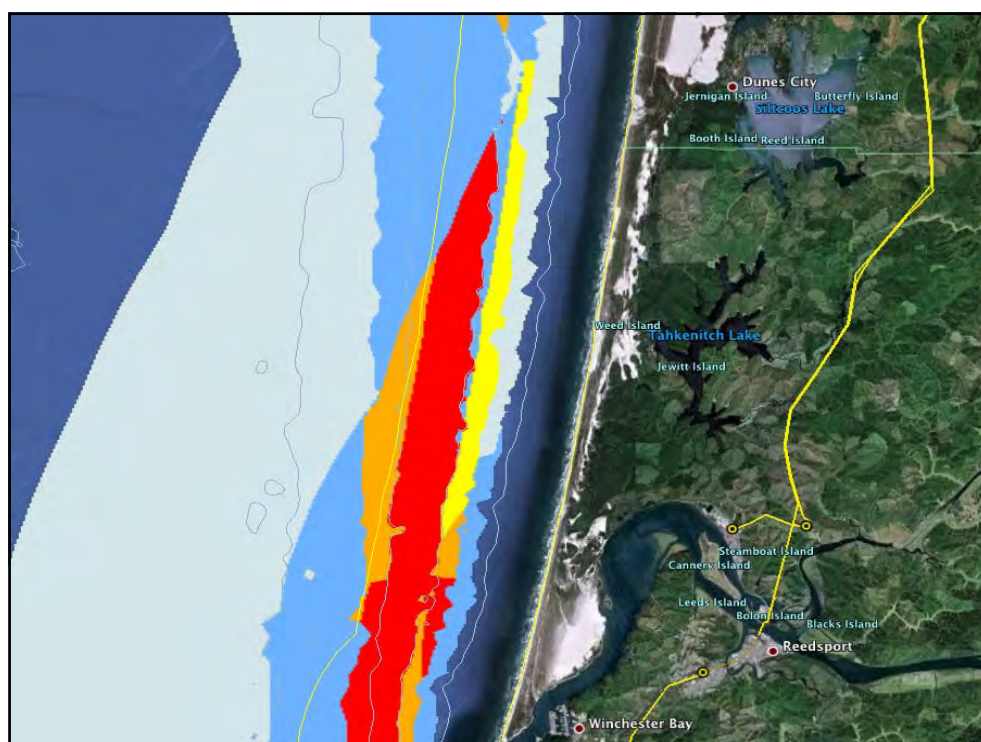
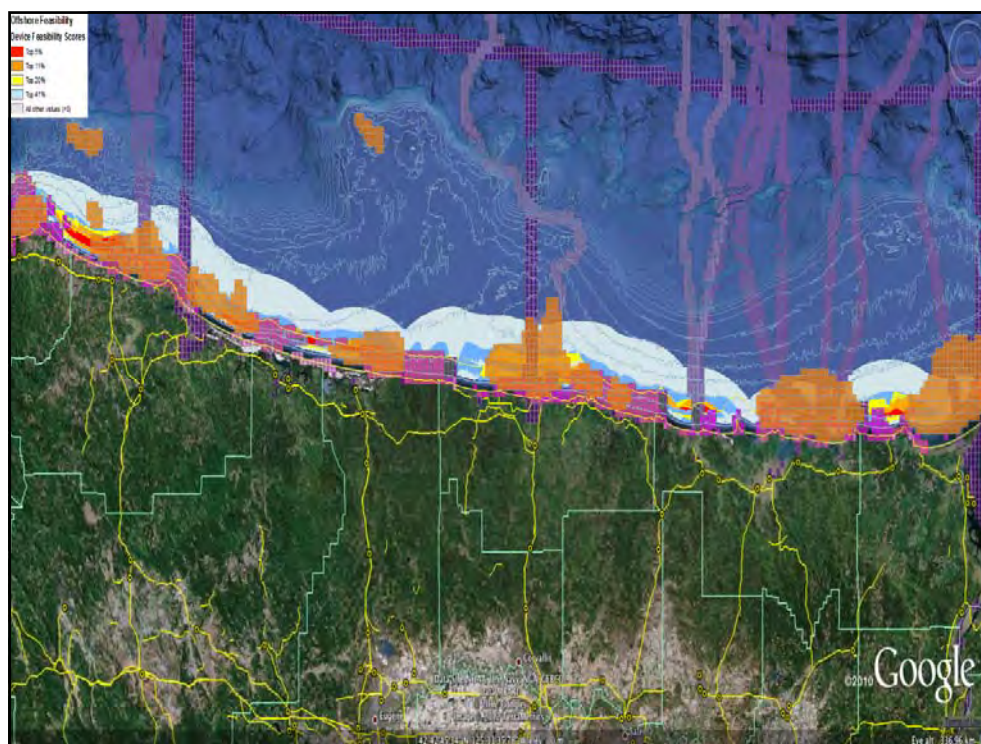
## Distance from kv distribution lines:

Ref.	Classification	Score
1	0 <3 NM	10
2	3 NM < 6 NM	5
3	6 NM < 9 NM	3
4	9 NM < 12 NM	1
5	> 12 NM	0

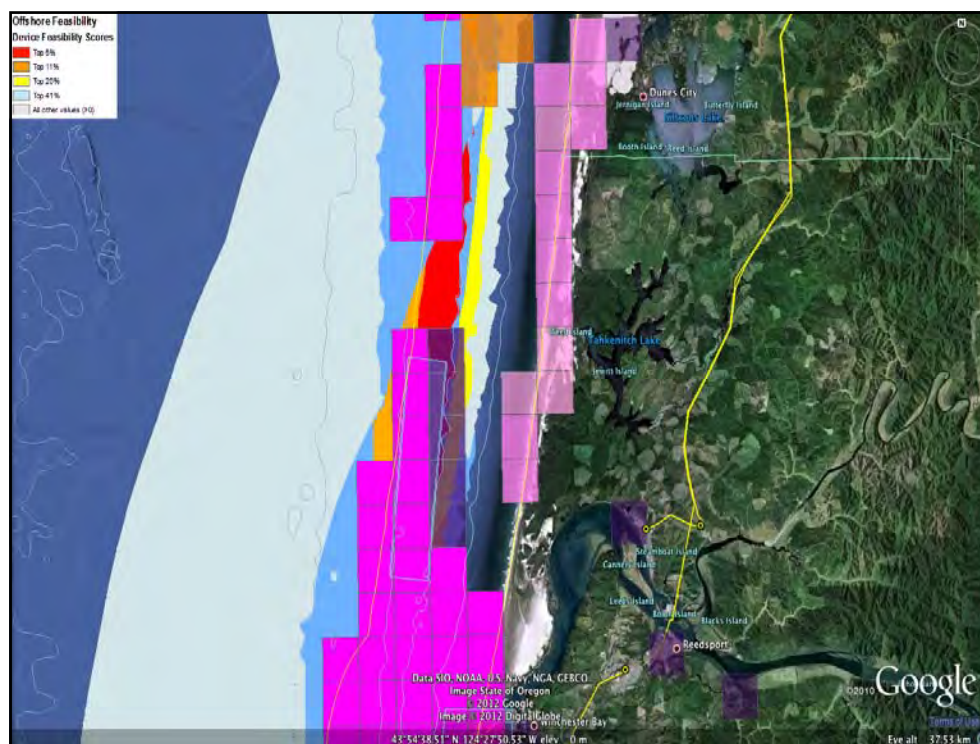
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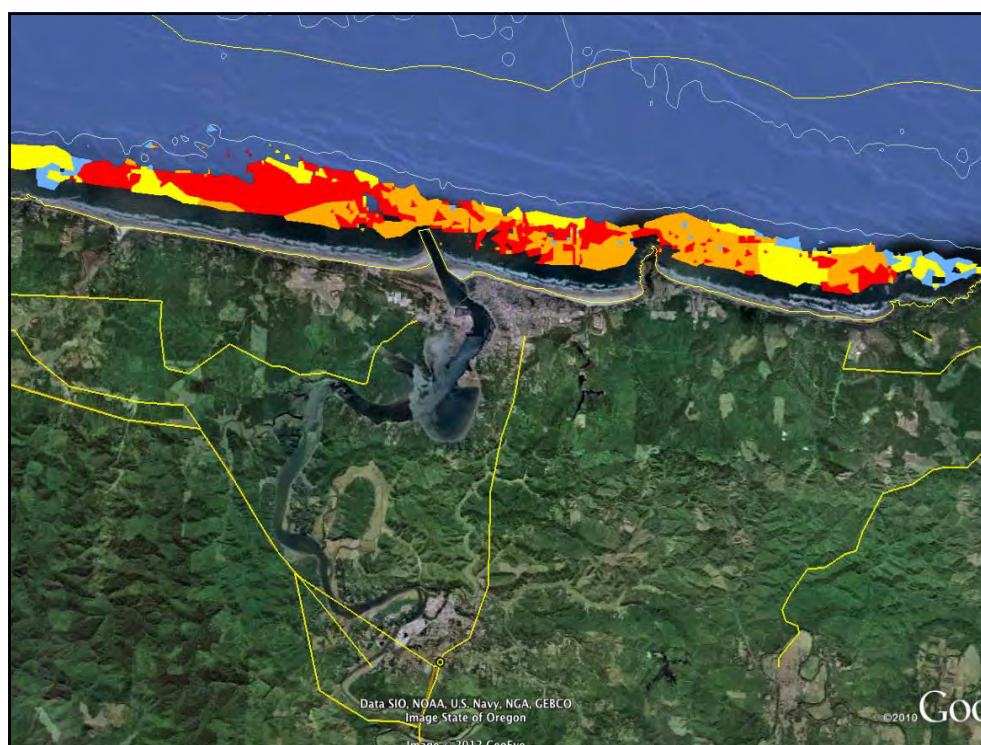












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### Next Steps:

- Resurvey technology developers
- Review existing parameters
- Expand the reach of grid connection and distance from shore
- Seek to tie to early stage project development areas
- Create new maps using OWET Cumulative Effects Tool

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### Questions?

[www.oregonwave.org](http://www.oregonwave.org)

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