

## DOCKETED

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# Data and Early Planning for Offshore Wind Energy

**Scott Flint**

California Energy Commission  
IEPR Workshop

Eureka, California

April 20, 2017



# California Offshore Wind Energy Gateway

In support of the Intergovernmental Renewable Energy Task Force

Search by keyword or location

powered by DATA

Get Started

Explore

Create

Community

My Workspace

What is the California Offshore Wind Energy Gateway?

What can I do?

How do I start exploring?

The Offshore Renewable Wind Energy Gateway assembles geospatial information on ocean wind resources, ecological and natural resources, ocean commercial and recreational uses and community values. This information will help identify areas off of California that are potentially suitable for wind energy generation.

[read more](#)



California Marine & Coastal Energy

California Marine & Coastal Management

California Marine & Coastal Ecology and Natural Resources

California Marine Fishing and Traditional Uses

## Featured Items



Map

California Commercial Fishing Recent History



Map

West Coast USA Federal and State Marine Protected Areas



Map

California Offshore Wind Resources



Map

Central California Offshore Use Zones



Map

Central California Offshore Geology and Wind Technology Depth Zones



Map

Central California Offshore Biological Resources

## California Off-Shore Wind Resources



This map is comprised of spatial datasets provided by BOEM to highlight wind resources along the coast of California along with some other designations.

Download the Fact Sheet & Get Involved



Follow Progress





# Data and Science

## PURPOSE

- Members provide input on a number of key data topics: datasets will be used by the Agencies to help identify and screen potential wind development call areas.
- Agency members are providing relevant data.
- Other members are invited identify relevant datasets and to share their data.



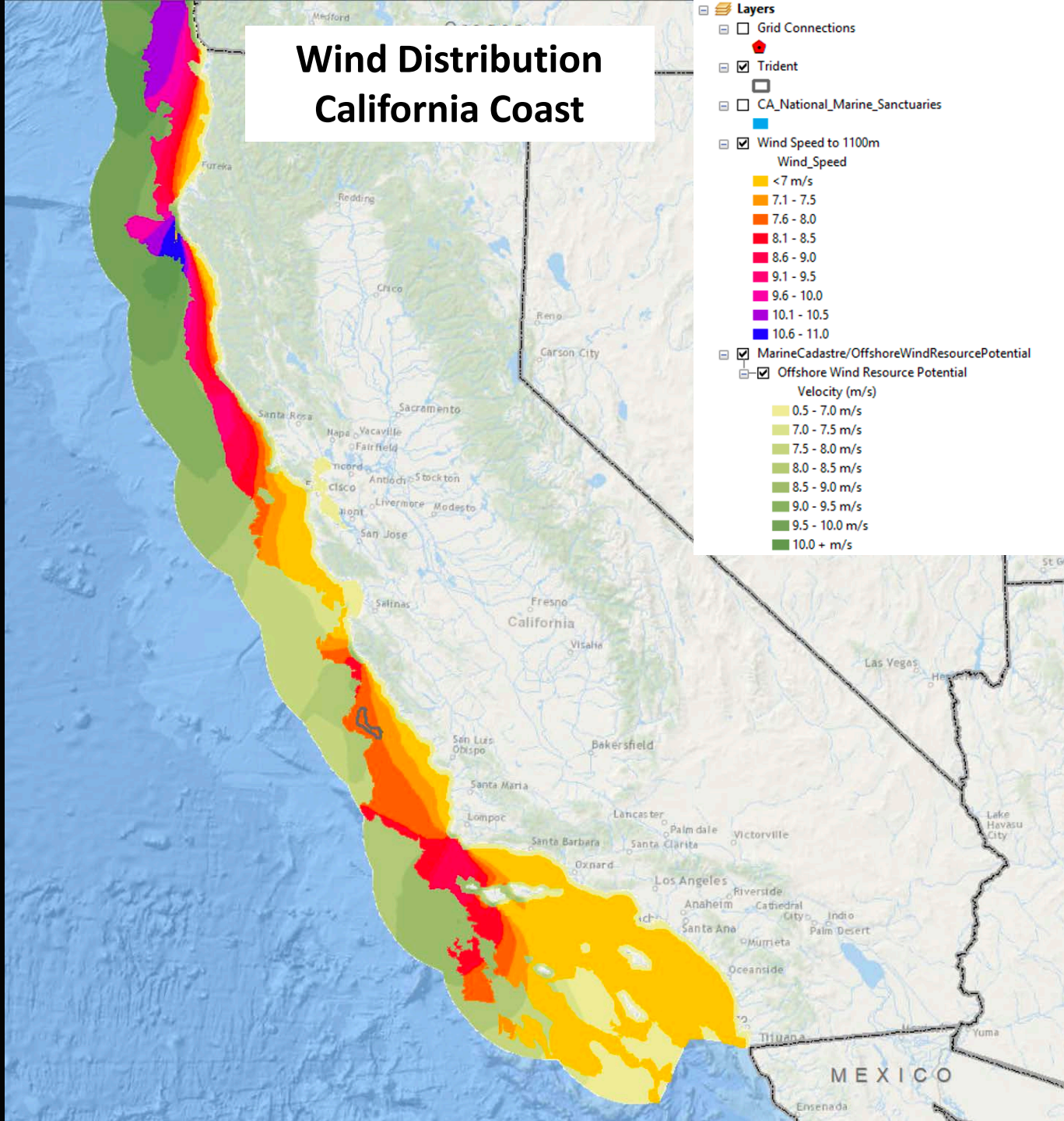
# Data and Science

## KEY DATA QUESTIONS

- For each topic, do we have the most relevant data and up-to-date versions? If not, where can we obtain it?
- Would you consider this (or these) datasets complete and scientifically appropriate for the screening exercise?
- How would you recommend they be used in performing the screening exercise?
- Is this data useful by itself, or is it best combined with other datasets to make it more useful?

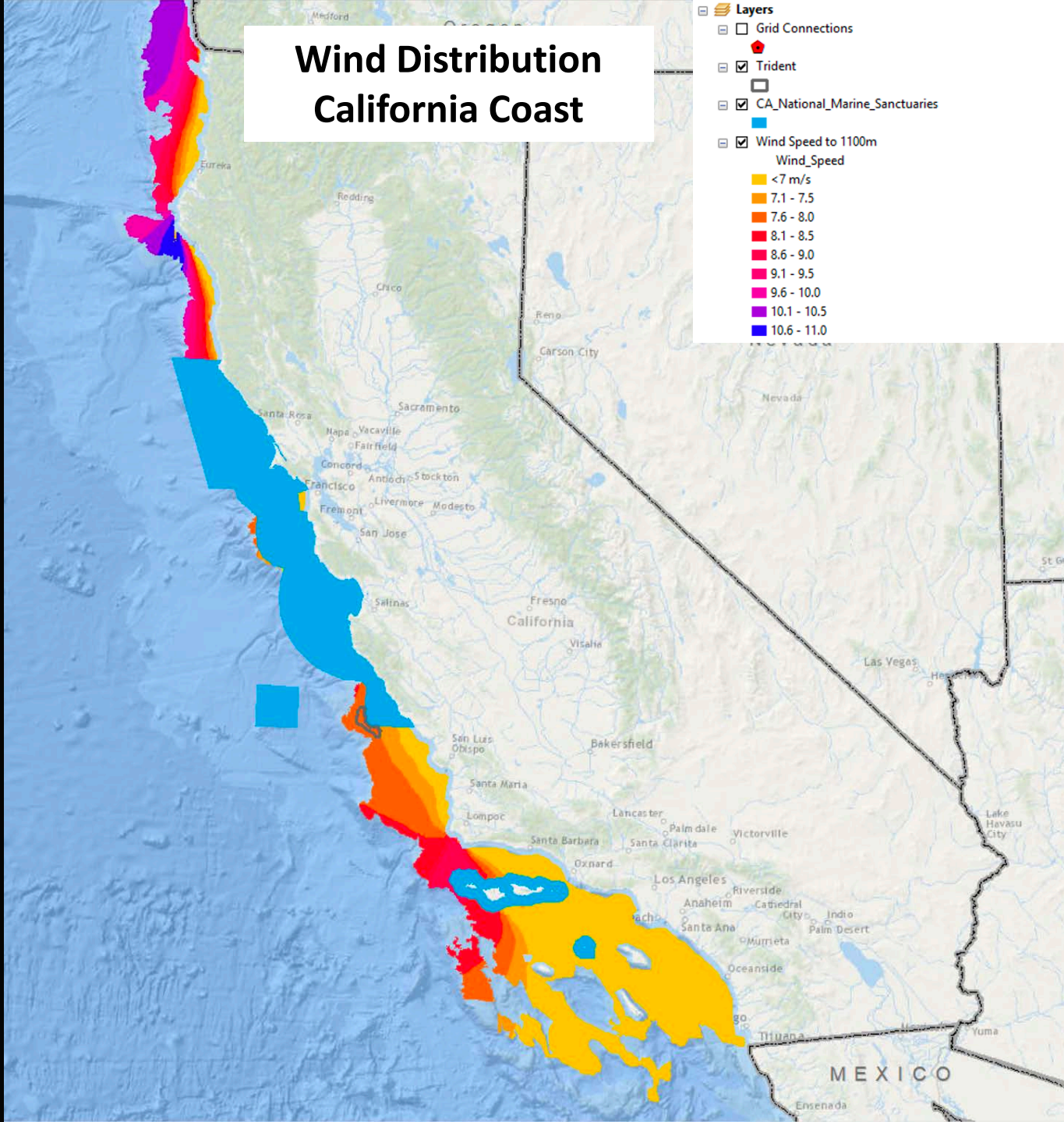


# Wind Distribution California Coast



# Wind Distribution California Coast

- Layers**
- Grid Connections
  - Trident
  - CA\_National\_Marine\_Sanctuaries
  - Wind Speed to 1100m
- Wind\_Speed**
- <7 m/s
  - 7.1 - 7.5
  - 7.6 - 8.0
  - 8.1 - 8.5
  - 8.6 - 9.0
  - 9.1 - 9.5
  - 9.6 - 10.0
  - 10.1 - 10.5
  - 10.6 - 11.0

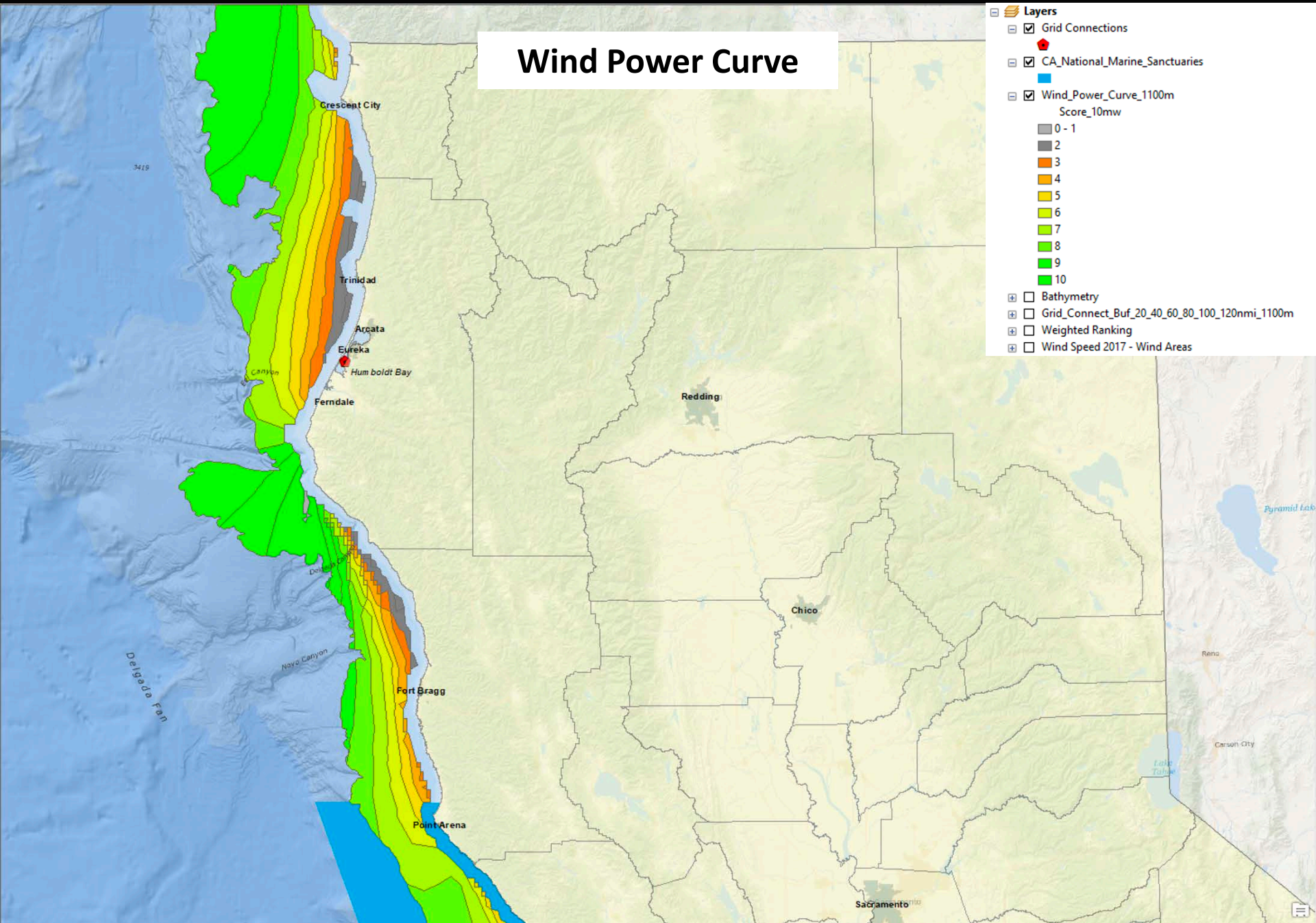




# Wind Power Curve

**Layers**

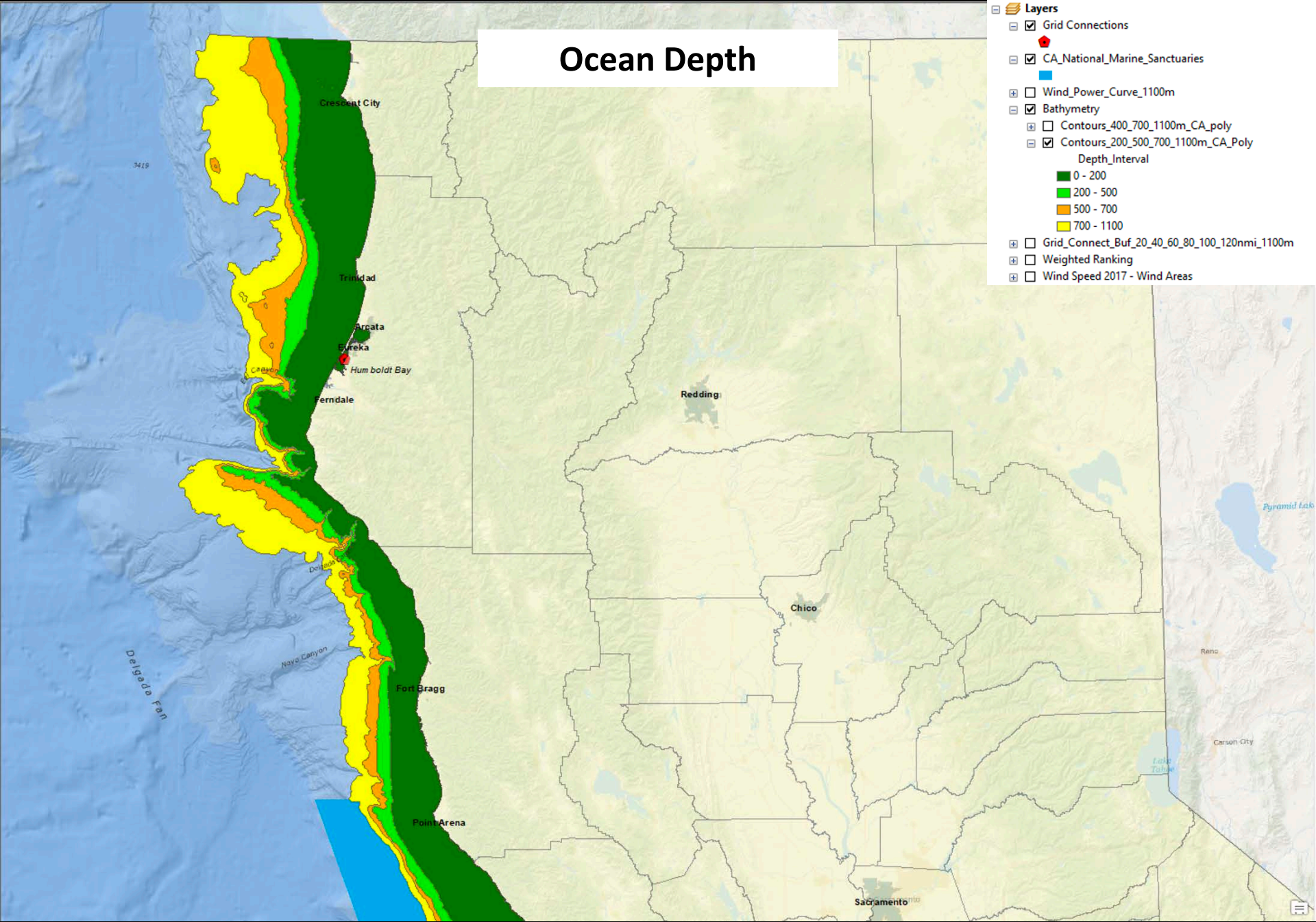
- Grid Connections
- CA\_National\_Marine\_Sanctuaries
- Wind\_Power\_Curve\_1100m
  - Score\_10mw
  - 0 - 1
  - 2
  - 3
  - 4
  - 5
  - 6
  - 7
  - 8
  - 9
  - 10
- Bathymetry
- Grid\_Connect\_Buf\_20\_40\_60\_80\_100\_120nmi\_1100m
- Weighted Ranking
- Wind Speed 2017 - Wind Areas





# Ocean Depth

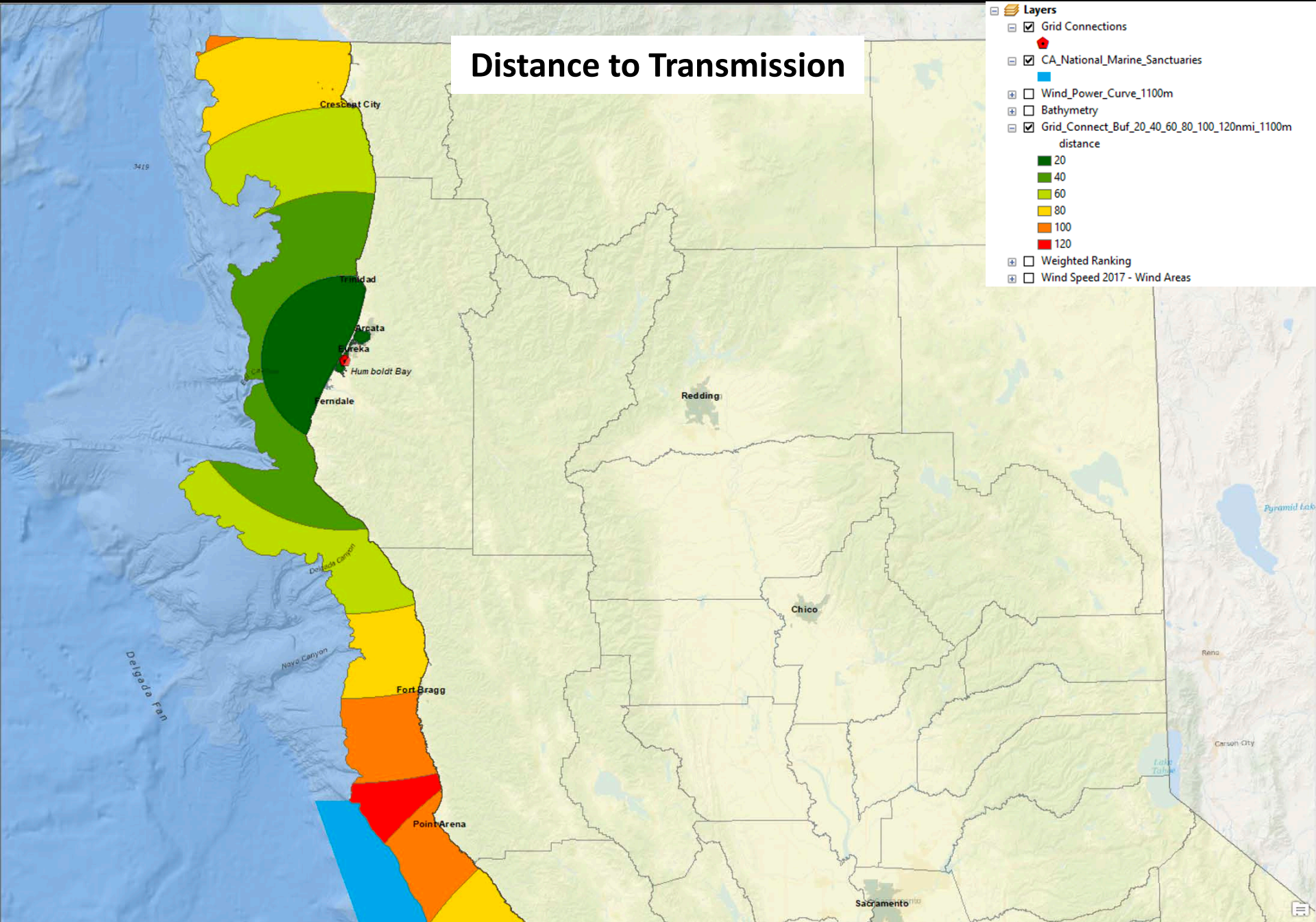
- Layers
- Grid Connections
- CA\_National\_Marine\_Sanctuaries
- Wind\_Power\_Curve\_1100m
- Bathymetry
  - Contours\_400\_700\_1100m\_CA\_poly
  - Contours\_200\_500\_700\_1100m\_CA\_Poly
- Depth\_Interval
  - 0 - 200
  - 200 - 500
  - 500 - 700
  - 700 - 1100
- Grid\_Connect\_Buf\_20\_40\_60\_80\_100\_120nmi\_1100m
- Weighted\_Ranking
- Wind\_Speed\_2017 - Wind\_Areas





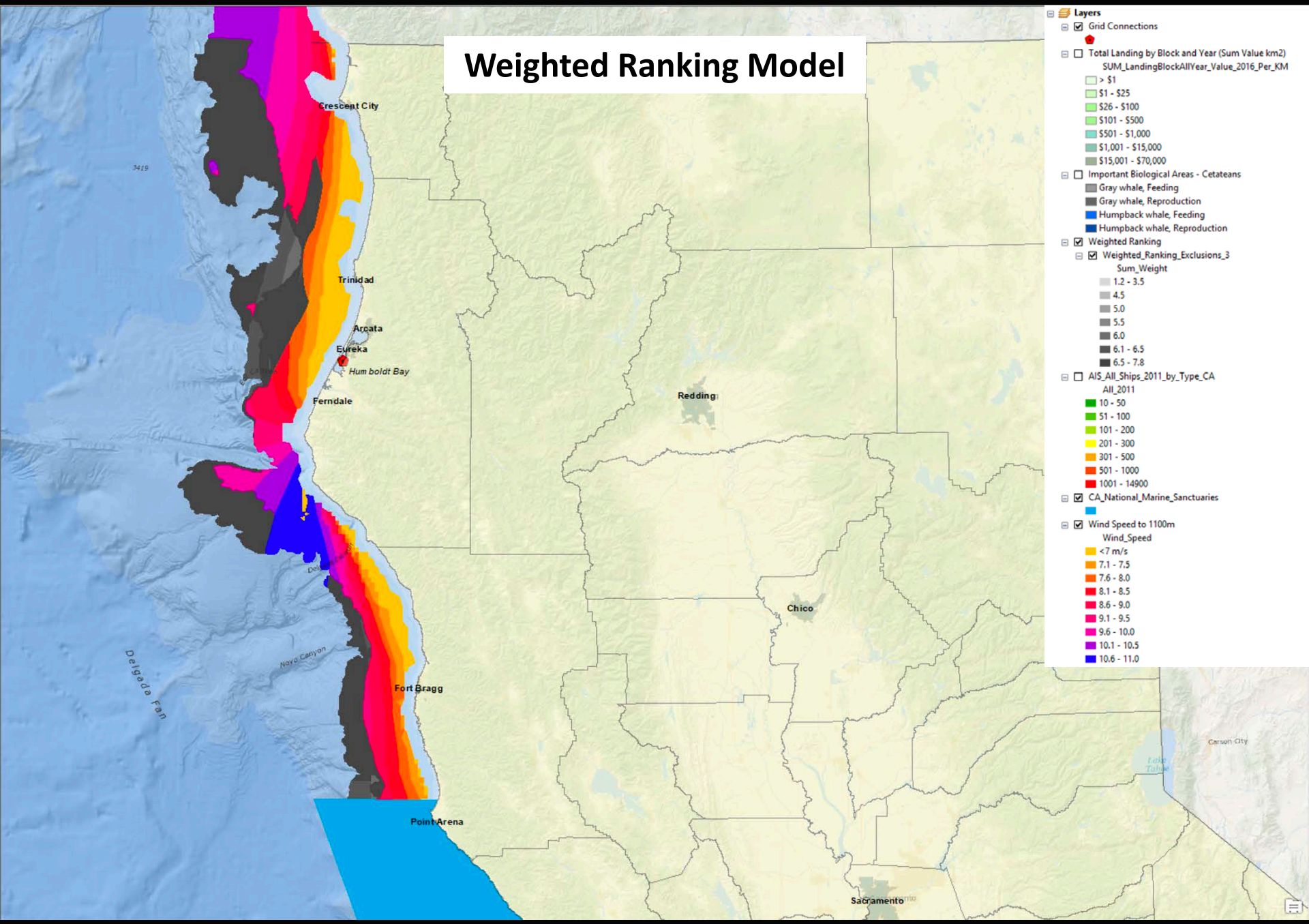
# Distance to Transmission

- Layers
- Grid Connections
- CA\_National\_Marine\_Sanctuaries
- Wind\_Power\_Curve\_1100m
- Bathymetry
- Grid\_Connect\_Buf\_20\_40\_60\_80\_100\_120mi\_1100m distance
  - 20
  - 40
  - 60
  - 80
  - 100
  - 120
- Weighted Ranking
- Wind Speed 2017 - Wind Areas



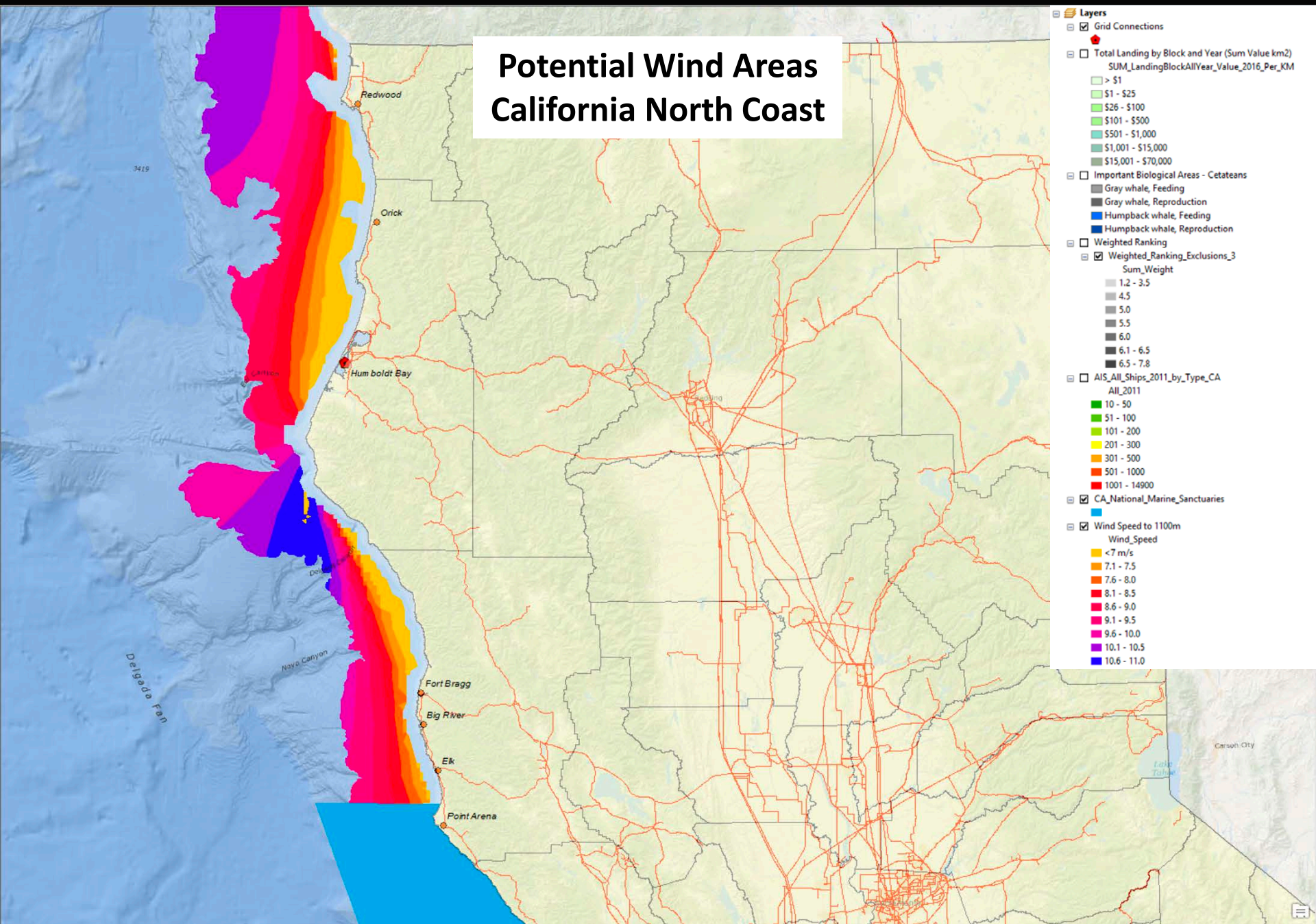


# Weighted Ranking Model





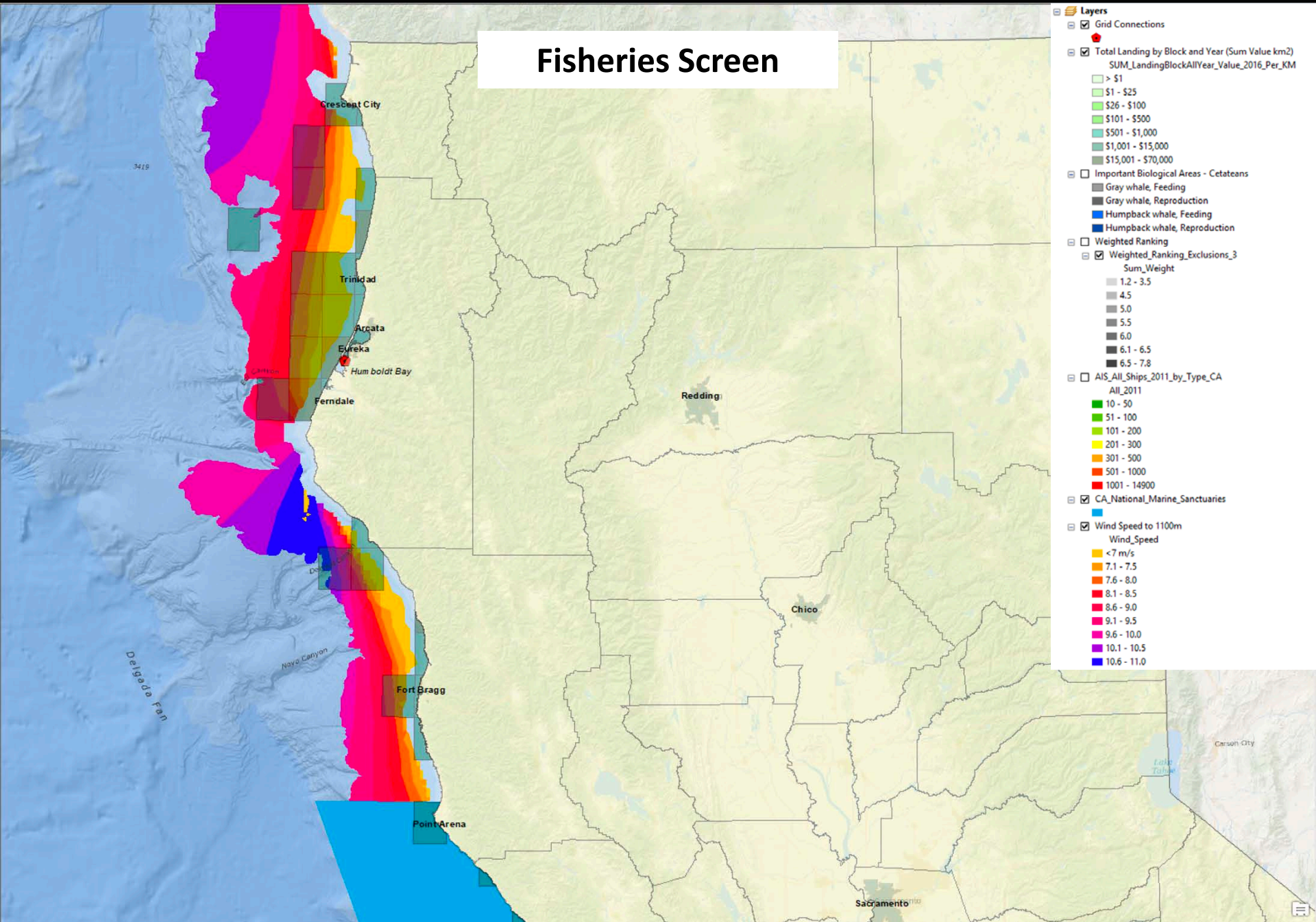
# Potential Wind Areas California North Coast



- Layers
- Grid Connections
- Total Landing by Block and Year (Sum Value km2)  
SUM\_LandingBlockAllYear\_Value\_2016\_Per\_KM
  - > \$1
  - \$1 - \$25
  - \$26 - \$100
  - \$101 - \$500
  - \$501 - \$1,000
  - \$1,001 - \$15,000
  - \$15,001 - \$70,000
- Important Biological Areas - Cetaceans
  - Gray whale, Feeding
  - Gray whale, Reproduction
  - Humpback whale, Feeding
  - Humpback whale, Reproduction
- Weighted Ranking
  - Weighted\_Ranking\_Exclusions\_3  
Sum\_Weight
    - 1.2 - 3.5
    - 4.5
    - 5.0
    - 5.5
    - 6.0
    - 6.1 - 6.5
    - 6.5 - 7.8
- AIS\_All\_Ships\_2011\_by\_Type\_CA  
All\_2011
  - 10 - 50
  - 51 - 100
  - 101 - 200
  - 201 - 300
  - 301 - 500
  - 501 - 1000
  - 1001 - 14900
- CA\_National\_Marine\_Sanctuaries
- Wind Speed to 1100m  
Wind\_Speed
  - <7 m/s
  - 7.1 - 7.5
  - 7.6 - 8.0
  - 8.1 - 8.5
  - 8.6 - 9.0
  - 9.1 - 9.5
  - 9.6 - 10.0
  - 10.1 - 10.5
  - 10.6 - 11.0



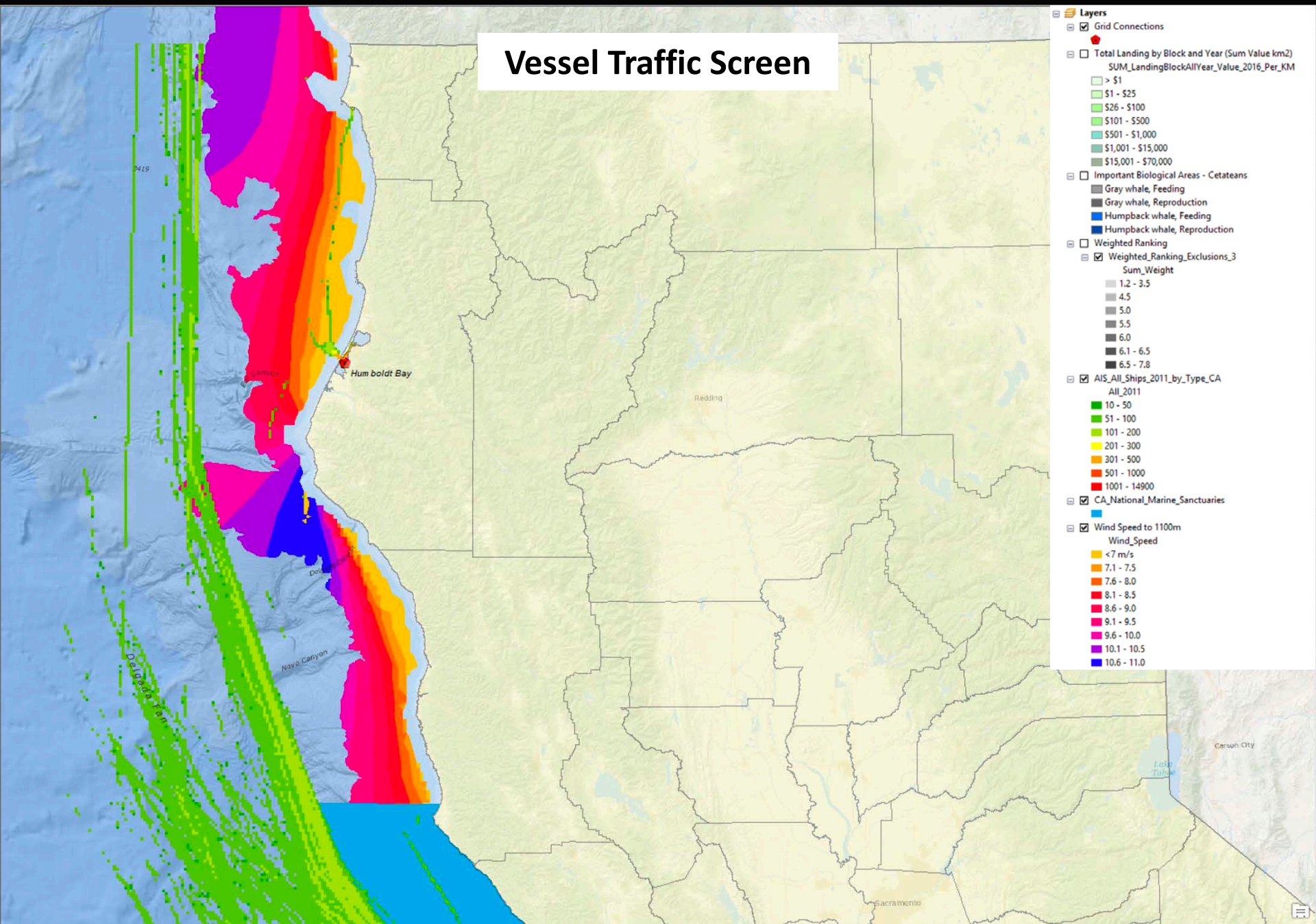
# Fisheries Screen





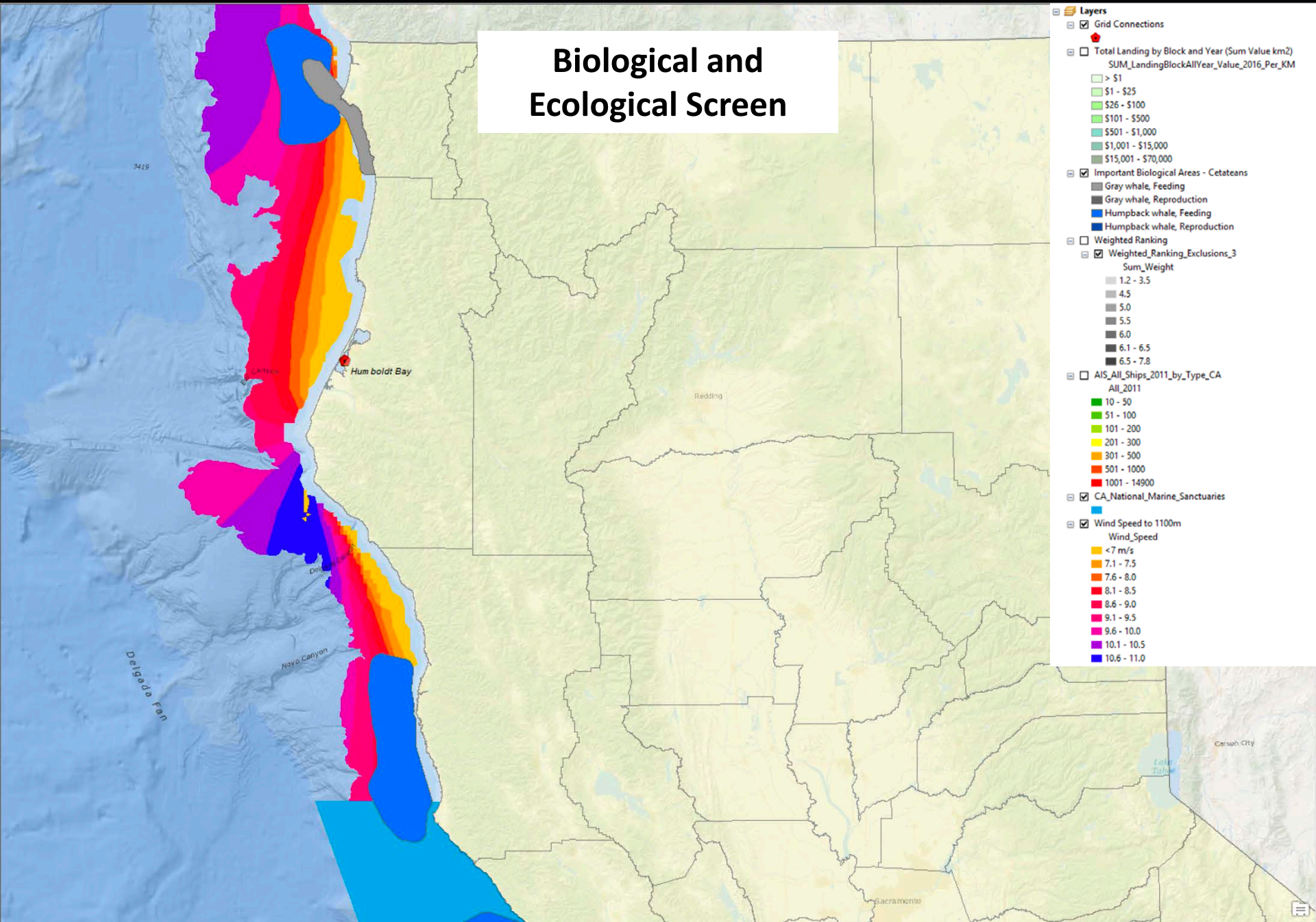
# Vessel Traffic Screen

- Layers
- Grid Connections
- Total Landing by Block and Year (Sum Value km2)  
SUM\_LandingBlockAllYear\_Value\_2016\_Per\_KM
  - > \$1
  - \$1 - \$25
  - \$26 - \$100
  - \$101 - \$500
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  - Gray whale, Feeding
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  - Humpback whale, Feeding
  - Humpback whale, Reproduction
- Weighted Ranking
  - Weighted\_Ranking\_Exclusions\_3  
Sum\_Weight
    - 1.2 - 3.5
    - 4.5
    - 5.0
    - 5.5
    - 6.0
    - 6.1 - 6.5
    - 6.5 - 7.8
- AIS\_All\_Ships\_2011\_by\_Type\_CA  
All\_2011
  - 10 - 50
  - 51 - 100
  - 101 - 200
  - 201 - 300
  - 301 - 500
  - 501 - 1000
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  - 9.1 - 9.5
  - 9.6 - 10.0
  - 10.1 - 10.5
  - 10.6 - 11.0





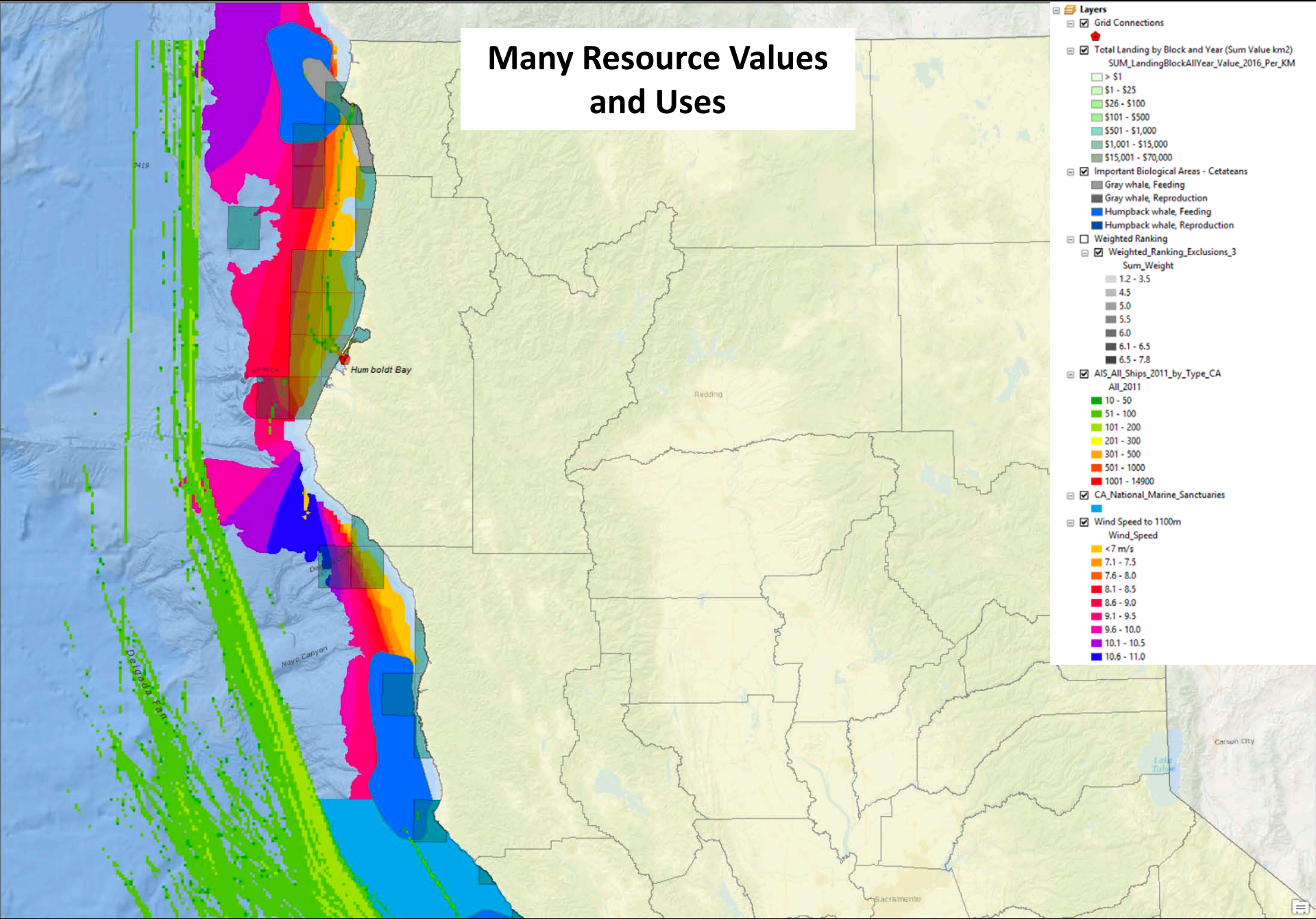
# Biological and Ecological Screen





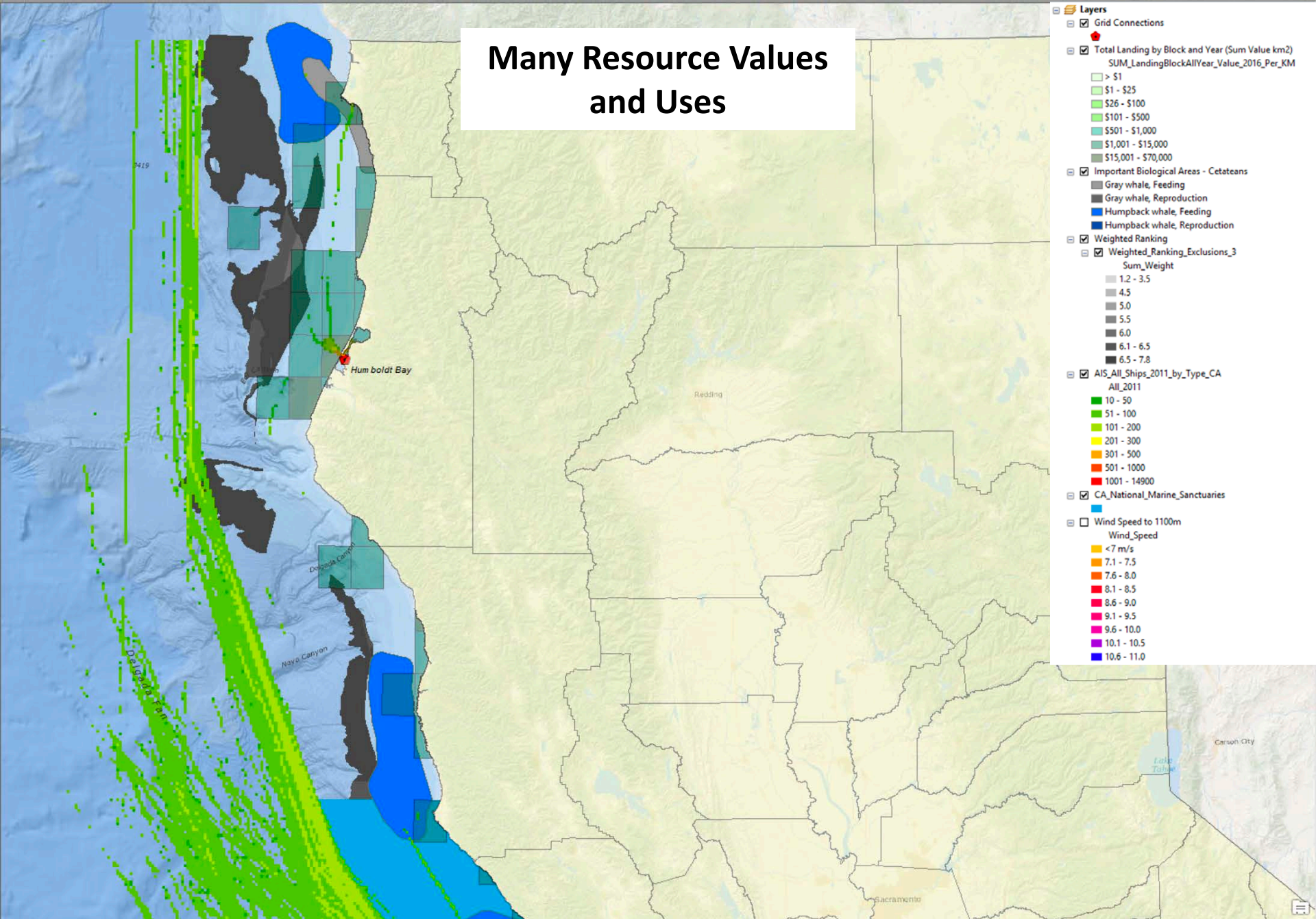
# Many Resource Values and Uses

- Layers
  - Grid Connections
  - Total Landing by Block and Year (Sum Value km2)  
SUM\_LandingBlockAllYear\_Value\_2016\_Per\_KM
    - > \$1
    - \$1 - \$25
    - \$26 - \$100
    - \$101 - \$500
    - \$501 - \$1,000
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  - Important Biological Areas - Cetateans
    - Gray whale, Feeding
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  - Weighted Ranking
    - Weighted\_Ranking\_Exclusions\_3  
Sum\_Weight
      - 1.2 - 3.5
      - 4.5
      - 5.0
      - 5.5
      - 6.0
      - 6.1 - 6.5
      - 6.5 - 7.8
  - AIS, All Ships, 2011, by Type, CA  
All\_2011
    - 10 - 50
    - 51 - 100
    - 101 - 200
    - 201 - 300
    - 301 - 500
    - 501 - 1000
    - 1001 - 14900
  - CA, National Marine Sanctuaries
  - Wind Speed to 1100m  
Wind\_Speed
    - <7 m/s
    - 7.1 - 7.5
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    - 8.1 - 8.5
    - 8.6 - 9.0
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    - 9.6 - 10.0
    - 10.1 - 10.5
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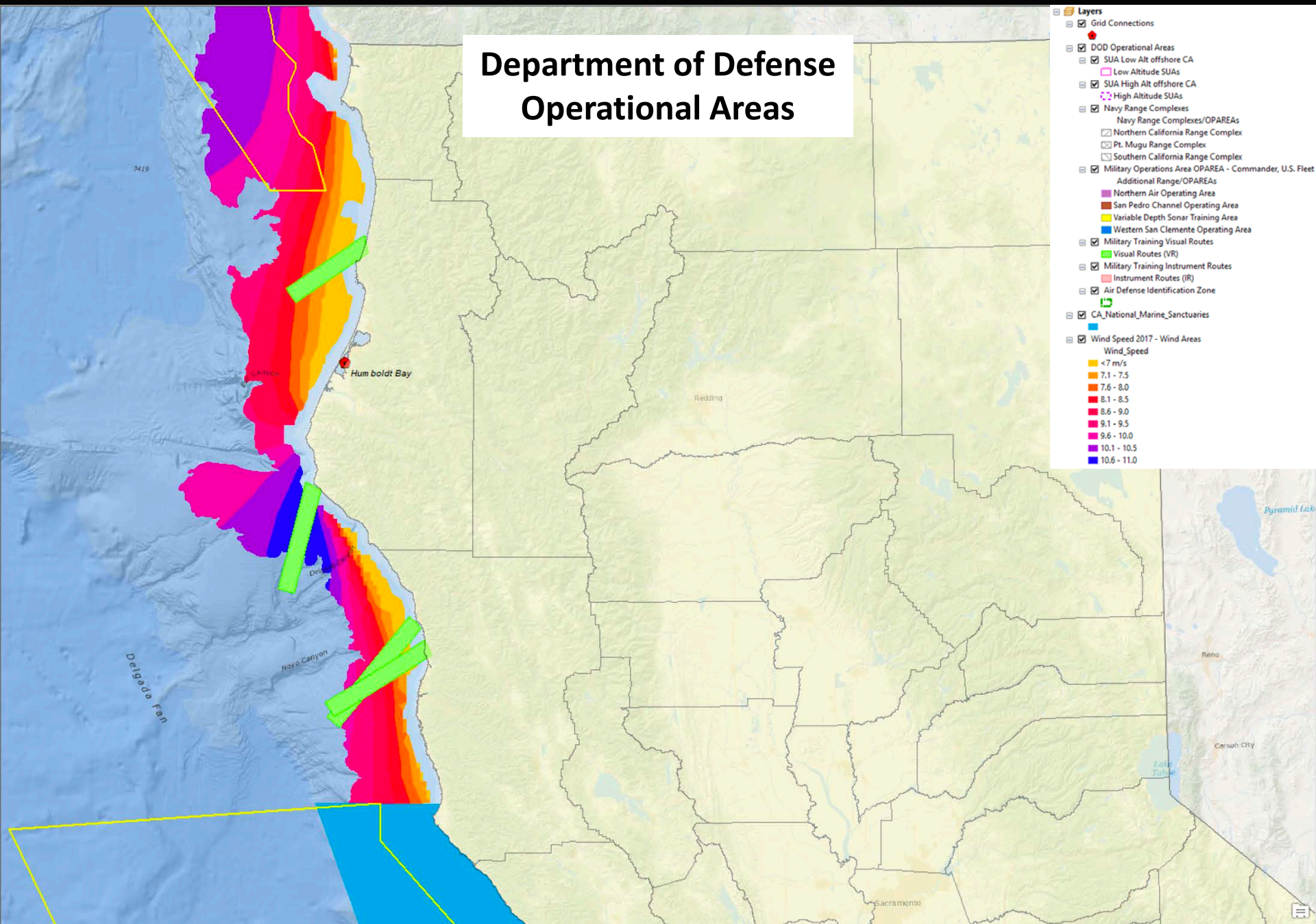


# Many Resource Values and Uses





# Department of Defense Operational Areas



## Layers

- Grid Connections
- DOD Operational Areas
  - SUA Low Alt offshore CA
  - SUA High Alt offshore CA
- Navy Range Complexes
  - Northern California Range Complex
  - Pt. Mugu Range Complex
  - Southern California Range Complex
- Military Operations Area OPAREA - Commander, U.S. Fleet
  - Additional Range/OPAREAs
    - Northern Air Operating Area
    - San Pedro Channel Operating Area
    - Variable Depth Sonar Training Area
    - Western San Clemente Operating Area
- Military Training Visual Routes
  - Visual Routes (VR)
  - Instrument Routes (IR)
- Air Defense Identification Zone
- CA National Marine Sanctuaries
- Wind Speed 2017 - Wind Areas
  - Wind\_Speed
    - <7 m/s
    - 7.1 - 7.5
    - 7.6 - 8.0
    - 8.1 - 8.5
    - 8.6 - 9.0
    - 9.1 - 9.5
    - 9.6 - 10.0
    - 10.1 - 10.5
    - 10.6 - 11.0



# Contact Information

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California Offshore Wind Energy Gateway

<https://caoffshorewind.databasin.org>