Planning for a new California Coastal Research Vessel (CCRV)

Presentation to UNOLS Council
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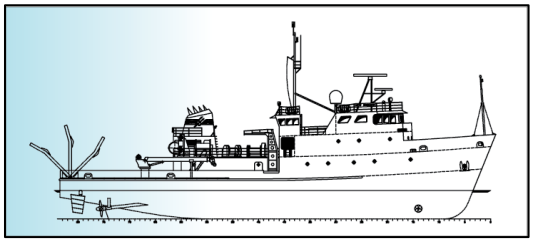
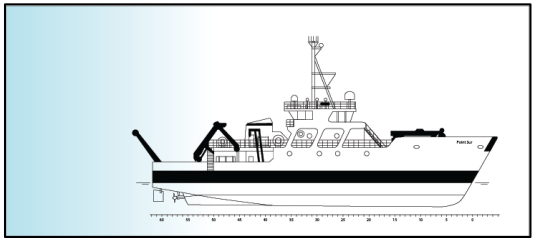
California-based Intermediate Class & smaller ships

Research vessels able to carry out California's local research and education needs have decreased from 3 to 1, with the last remaining ship approaching the end of its service life. **A new vessel is needed.**



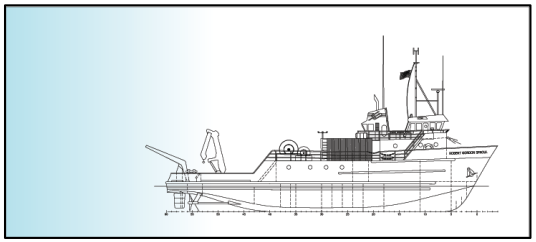
INTERMEDIATE

R/V *New Horizon*
170 feet / 40-day endurance
12 crew / 19 scientists



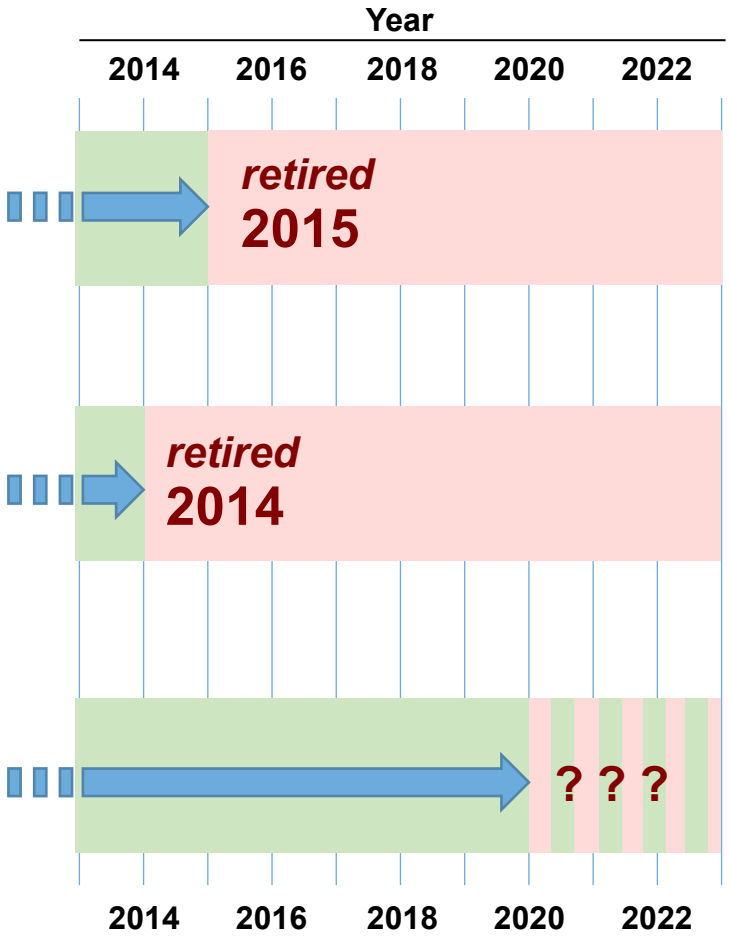
REGIONAL

R/V *Pt Sur*
135 feet / 21-day endurance
8 crew / 12 scientists



LOCAL / COASTAL

R/V Robert Gordon Sproul
125 feet / 14-day endurance
5 crew / 12 scientists



Needed

California needs a dedicated research vessel

- California society and economy depend on the ocean for resources, commerce, defense, infrastructure, and quality of life.
- Growing need for undergraduate and graduate education involving instruction, research and practical training at sea.
- California economy, 6th largest in world, is strongly tied to the ocean and drives a growing demand for maritime research & development.
  - *Roger Revelle* and *Sally Ride* have worldwide research portfolios, and will not predictably be available in California waters
    - Universities throughout California require an accessible, affordable, capable research vessel for classes and student research projects, operating on time frames tailored to academic calendars.
    - California needs the ability to mount rapid response missions to ephemeral events, with quick access to a capable, well-outfitted, professionally-staffed vessel

Collaborating on a shared research vessel

Vision: establish a new kind of partnership within California, involving public and private universities, research institutions, state agencies and non-governmental organizations to support a new **California Coastal Research Vessel (CCRV)** for seagoing education and research.

Efforts to date:

- **Moss Landing Marine Laboratories** (California State University) and the **Scripps Institution of Oceanography** (University of California) have agreed to collaborate jointly on this effort.
- Directors of SIO & MLML, Chancellor of UC San Diego and President of San Jose State University all strongly endorsed this collaboration and approach March 2017
- Committed significant seed funding from each institution
- Assembled Scripps *Small Ship Task Force* to define institutional needs
- Sent *Dear Colleague* letter to 100+ ship users statewide to solicit input
- Scripps began a DOT-sponsored feasibility study (with Sandia National Labs) of a zero-emission research vessel (ZERo/V), including conceptual design

MARAD sponsored feasibility & design study:

Yes: Zero Emission Research Vessel: ZERo/V

Full report to FIC at Fall UNOLS meeting

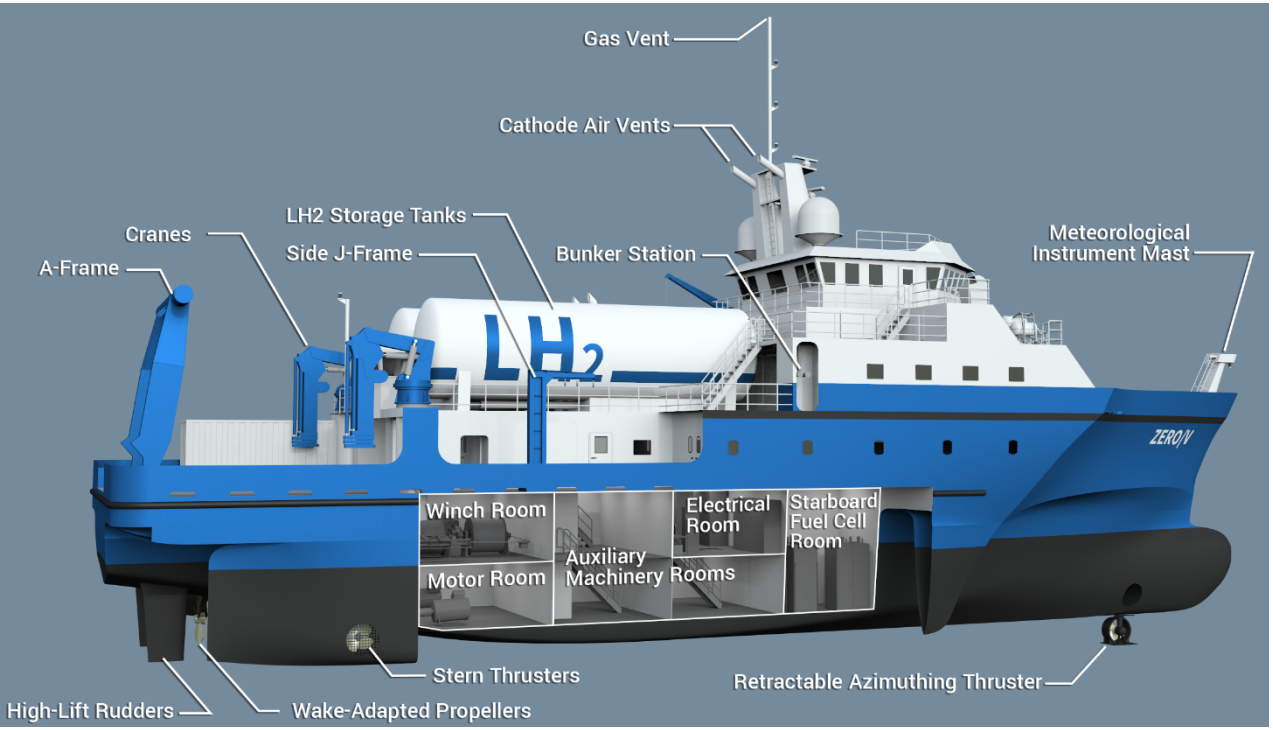
- Liquid hydrogen fuel cells
- **No fossil fuels required**
- **Zero emissions**
- General purpose capability
- 2400 nm range
- Dynamic positioning
- 18+ scientists, 11 crew
- Large lab spaces
- Large working deck
- Substantial over-the-side handling systems
- Very low radiated noise
- Excellent sonar performance
- Length: 170 feet
- Beam: 56 feet
- Draft: 12 feet

Sandia National Laboratories

Scripps Institution of Oceanography, UC San Diego

Glosten

Zero-emission research vessel feasibility study: ZERo/V



- Design study funded by MARAD for a new coastal / local vessel
- Liquid hydrogen fuel
- Zero emissions: clean!
- Electric drives: quiet!
- **Feasible: YES**, using existing technology
- Hydrogen fuel cells
- Next: create affordable green design to replace *Robert Gordon Sproul*

The zero-emission research vessel (ZERo/V) concept vessel has a range of 2,400 nm with berths for 24 scientists, supporting general-purpose missions. Anticipated construction cost: $80 million.

CCRV: Goals for 2017

Science mission requirements: Consult with likely ship users and sponsors to develop SMRs, building on existing UNOLS products

Develop management plan: How will a single vessel be managed and operated such that it is able to support multiple institutions?

State and local government: Engage, educate, and build support.

Conceptual vessel design: Based on the foregoing, develop CCRV concept.

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