PORT REPORT

Economic Vitality • Partnerships • Openness • Stewardship



Wooden boats &
Boat electrical safety &
Boatyard BBQ

PORT OF PORT TOWNSEND

EST. 1924

FALL 2026 NEWSLETTER



Visiting boats come from near and far for the annual Wooden Boat Festival in September. These boaters anchored up last year near the mouth of the Point Hudson Marina to attend Festival events.

From the Executive Director

Early fall may be the best time for boaters



By Eron Berg

Port Executive Director

The end of summer and the beginning of fall might be the best of times to be a boat owner, or someone who appreciates boats, at the Port of Port Townsend.

Many recreational boats that were trailered to our boat ramps, or that untied from our docks for summer adventures, are coming home. They will find well-protected, safe marinas and almost 500 of the West Coast's best marine trades awaiting, in the event that they need some professional work done to get ready for the winter, or for next year.

(Note to skippers: Even with boaters returning, there is ample guest moorage available at our beautiful, intimate Point Hudson Marina, or at the larger Boat Haven Marina.)

In September, the commercial fishing fleet begins to arrive. Many commercial vessels are home ported in Port Townsend. They have been purse-seining, trolling, longlining or gillnetting in Southeast Alaska, or beyond. The owners and crews, most of them local people, will be welcomed by family and friends, even as the skippers contemplate what improvements their vessels need to make the next trip north next season.

Our exceptional marine trades stand ready to do what's needed for the commercial fleet.

Wooden Boat Festival

September brings the 49th annual Wooden Boat Festival to Point Hudson Marina. It takes place from Thursday, Sept. 10 through Sunday, Sept. 13. The Northwest Maritime Center / Wooden Boat Foundation is ready for a fleet of wooden boats of all sizes and shapes.

The festival will also carry on the tradition that makes this Festival so unique for boaters. Every day, workshops will take place that teach boating and maintenance skills such as varnishing, diesel maintenance, woodworking, marine electronics basics and much more. This is a teaching festival, one of the reasons it's so popular with boaters and others.

Among the attractions at this year's Wooden Boat Festival will be the 1914 GloryBe, with its local hands-on owner Betsy Davis. The story of GloryBe and Davis is told in this edition. There will also be the Joshua, a replica of the famous Spray that Joshua Slocum sailed alone around the world from 1895 to 1898, making him the first person to complete a solo circumnavigation.

The Port of Port Townsend's Point Hudson Marina has hosted every Wooden Boat Festival since its start in 1977, and we're inordinately proud to be a reliable partner.

Point Hudson, Boatyard BBQ

We've also invested millions into the upkeep of this marina, including the rebuild of the docks, the rebuild of the jetties that protect the harbor mouth, and this year the rebuild and replacement of the roofing on most of Point Hudson's buildings, first constructed in 1934. That project is also described in this edition.

For those investments, we thank the taxpayers of Jefferson County, whose faith in the Port was such that they elected to increase their taxes in 2019 so the Port could attract grant funding that made possible important capital projects for Point Hudson and other parts of our infrastructure.

September also brings the fourth annual Boatyard BBQ, in which boatworkers and the public are invited to the Boatyard for a celebration that includes live local music, food including barbecued coho salmon, salad and drink. It happens on Thursday, Sept. 17.

The BBQ is more than just a party. It's a chance to welcome the commercial fleet home, and to celebrate the marine trades who form such a vital part of Jefferson County's economy and character. More details can be found on the back page of this edition of Port Report.

Marine electronics

A final note: Your public Port remains committed to the safety of its boat owners, their crews and anyone walking our docks. That's why the Port has been training its staff to be aware of the dangers posed by electricity in marina waters, and to implement improvements that reduce risks.

Improvements to the Port's electrical infrastructure are being planned. In the meantime the Port offers information about what boaters themselves can do to minimize risks. That's part of a special 4-page pullout section in this edition of the Port Report.

(As always, I'm easy to contact and I'd like to hear from you. Call me at (360) 316-6013 or email me at eron@portofpt.com.)

ON THE COVER: At a recent Wooden Boat Festival, the lapstrake hull of this experienced sailboat got a close look.

Commissioner's Corner

Wooden Boat Festival celebrates skills, jobs, legacy



By Carol Hasse
District 2 Commissioner

Heart and soul, I believe we are a community and a Port bound together by a love of boats.

Whether we "need" our vessels for work, recreation or a beautiful, uplifting sight to behold, our boats inspire craft, trades and art – and also provide transportation, occupations and spiritual renewal. They are the authenticity, identity and economy of the Port of Port Townsend.

Jefferson County boasts an astounding depth and breadth of highly-skilled marine tradespeople. Among the last working waterfronts on either of our nation's coasts, our Boatyard is considered by most mariners to be best of its kind. It is also one of the few that welcomes an owner to work on his or her own boat, or to avail themselves of some of the local talent.

Port Townsend Bay is also home to the world-renowned Northwest School of Wooden Boatbuilding (NWSWB). Inspired by Port Townsend's earliest Wooden Boat Festival and sustained by the tireless work of many, NWSWB graduates often gain employment in our Boatyard's marine trades businesses. This enriches and secures the future of a working waterfront.

As one of the founders of the Port Townsend Wooden Boat Festival, perhaps I may be excused for my belief that our community's annual celebration of wooden boats of every size and description has been an inspiring and integral part of our marine trades economy's ongoing success – and maritime history. The thousands of local, national and international attendees of all ages, maritime interests, experience and accomplishments who have participated in our Wooden Boat Festival since 1977 is remarkable. The owners who bring their vessels by land and sea (some crossing continents and oceans) are as inspirational as the boats they have built, restored or stewarded.

Northwest Maritime Wooden Boat Festival Director Barb Trailer and her host of volunteers, support the educators, classes, vendors, musicians, festival-goers and boaters with the best of hospitality and care – in and around the harbor, and in the Maritime Center itself.



At the 2024 Wooden Boat Festival, a crowd gathered around a shipwright who described the process of an almost complete rebuild of the 1910 gaff-rigged cutter yacht, Tally Ho. The rebuild and launch, captured on a popular YouTube channel, was managed by Leo Sampson Goolden.

The Port of Port Townsend is proud to welcome the Wooden Boat Festival to the Point Hudson harbor for the 49th year.

The Port has been working hard to authentically restore Point Hudson's historical buildings with new roofs, windows, energy-efficient HVAC systems and fresh paint. The jetties that protect the marina are just two years old, but built in keeping with the 1936 originals. The Port is especially proud to welcome all to a new Mariners' Memorial, located on the side of the marina next to the NWMC. The walkway's bronze kelp entry arch was designed and cast locally by Pete Langley at Port Townsend Foundry.

The Port of Port Townsend thanks YOU, our community, for your participation and support (and sometimes patience) for the annual Wooden Boat Festival and its many gifts. We thank the boats, which are our portal to adventure and the natural world, and also to dreams, to meaningful occupations, to life long skills, and to shipmates true.

Please join us at the Festival, Sept. 10 through Sept. 13.

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The GloryBe, now 112 years old, is one of the stars of the Wooden Boat Festival in Port Townsend, which takes place Sept. 10-13 festival at the Port of Port Townsend's Point Hudson Marina. She is owned and operated by Betsy Davis, who until recently was the guiding light of the Northwest School of Wooden Boatbuilding.

GloryBe's story: Resilience, beauty, independence

Betsy Davis' labor of love is one star of the Wooden Boat Festival

One of the dozens of wooden boats to be moored at the Point Hudson Marina for the 2026 Wooden Boat Festival will be the GloryBe. This 36-foot, double-ender power boat is notable for her legacy, the determination of her current owner and the owner's frequent shipmates.

The legacy: GloryBe's hull was built plank-on-frame in 1914 by the Taylor-Grandy boatyard on Vashon Island. She is a precursor of the Lake Union "dream boats." Now 112 years old, she has been lovingly cared for and restored over her long lifetime.

She is a regularly featured participant in Victoria's Classic Boat Festival, and Port Townsend's Wooden Boat Festival.

The owner: Betsy Davis has been, until her recent retirement, the executive director of the Northwest School of Wooden Boatbuilding, based in lower Hadlock just 10 miles from Point Hudson.

An early Microsoft refugee, Betsy decided she needed to become a hands-on owner of a wooden boat. She bought GloryBe in 1997, and for years kept her in the covered moorage of the Seattle Yacht Club. (GloryBe's homeport today is the Port Ludlow Marina.)



Betsy Davis is shown on the GloryBe, in this image from a video shown on The Boat Geeks when she retired from the Northwest School of Wooden Boatbuilding in late 2025.

Davis credits her Port Townsend-based maritime mentors who have taught her how to cruise GloryBe in the San Juans and Canadian Gulf Islands. Her primary crew has been Carol Hasse, one of the founders of the Wooden Boat Festival in 1977 and a world-renowned blue water sail maker, now a Port of Port Townsend commissioner. Others include Ace Spragg, maritime education leader at both the Northwest Maritime Center and the boat school, Heidi Eisenhour, former fishing person and current Jefferson

County Commissioner, and Nancy Erley, a two-time circumnavigator.

The boatyard that built GloryBe is long gone. But GloryBe's reputation for independence lives on. Pacific Motor Boat reports that in 1917 Glorybe broke free of her moorings with no one aboard and crossed from Orcas Island to Point Roberts unscathed.

Davis acquired GloryBe shortly before enrolling in the Gompers Wood Boatbuilding School, part of a marine carpentry program at Central Seattle Community College. In the winter of 2002, a fire swept through the moored boats of the Seattle Yacht Club. Most of GloryBe was burned, and except for a bit of the bow, she sank in her slip.



When a crane fished the GloryBe out of the water after a disastrous fire in 2002 at the Seattle Yacht Club on Seattle's Lake Union, the bottom of her hull was intact but almost nothing else. She was rebuilt by Betsy Davis and other students of a Seattle Community College boatbuilding program, and relaunched in 2005.

That's when the instructor at the college told Davis that when GloryBe was raised and could float on her own lines, the school could turn her rebuild into a class project if Davis paid for materials. She did, and also did hundreds of hours of hands-on work.

She was restored over the next three years. Hasse estimated that two-thirds of the vessel was rebuilt. When the work was completed in 2005, she was relaunched with a celebration that included over 100 students who worked on her, and a dozen previous owners.

That is, largely, the GloryBe of today. Her current four-cylinder Isuzu diesel replaced an older diesel engine which had replaced a marinized gas engine. Over the last decade numerous graduates of the Northwest School of Wooden Boatbuilding have worked on Glorybe.

This spring alum Jeff Matthews replaced the lead-acid batteries with lithium iron phosphate batteries to upgrade Glorybe's charging, storage, and duty cycle, and also installed 600 watts of solar to extend the time Betsy can cruise away from the grid. Matthews installed state-of-the-art battery management systems and an electronic tracking system that collects information and displays it on a touch screen at the helm.

Davis' interest and commitment to wood boats translated into serving as the executive director of the Center for Wooden Boats, based on south Lake Union in Seattle, a role she held for 11 years before moving to Jefferson County to become the executive director of the Northwest School of Wooden Boatbuilding.

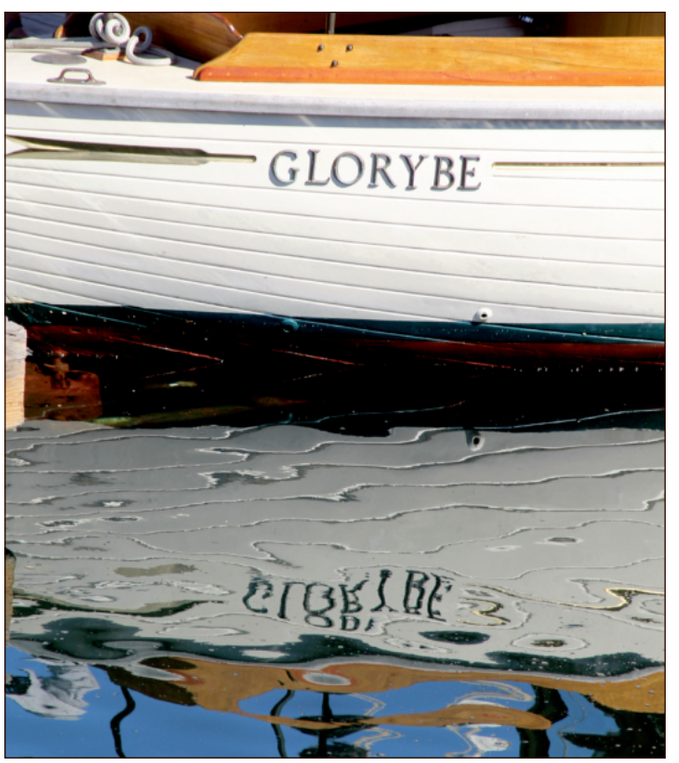
She did that work for another 10 years, partnering with Kevin Ritz to create the nine-month Marine Systems program, and invested over $7 million to improve classrooms, equipment, and the school's campus. She announced her retirement in late 2025.

Davis said she is thrilled to reconnect with colleagues she worked with in Seattle at the Center for Wooden Boats who are now in leadership in Port Townsend. That includes Northwest Maritime Executive Director Jake Beattie, former Jefferson County Historical Society director (now in charge of City of Port Townsend communications) Shelly Leavens and Port of Port Townsend Lease and Contracts Administrator Heron Scott.

Especially since retirement, GloryBe is at the center of her life.

The vessel has a covered cockpit, a full Pete Langley bronze railing around the foredeck, new chartplotter and radar, upgraded ground tackle, and a carbon fiber dinghy. The interior design allows a raised wheelhouse to communicate directly with the galley.

By anyone's reckoning, she is a beautiful, shapely boat, and she slips through the water under the hand of Davis and crew. Even at 112 years old, she has many more sea miles – and perhaps more independent journeys – ahead.



The GloryBe's name is reflected on the water during her appearance at the 2025 Wooden Boat Festival in the Point Hudson Marina.



In June of this year, a crew from Kanway Abatement and Demolition from the Seattle area removed the asbestos roofing shakes that were part of the original Point Hudson buildings from 1934. The crew double-bagged the shakes then hauled them to a certified landfill in Oregon.

Re-roofing at Hudson's historic buildings almost done

Originally built as a U.S. government sailors' quarantine station in 1934, the white-washed wooden buildings that surround the Point Hudson Marina are coming up on 100 years of age.

But the Port of Port Townsend, which acquired the buildings and the marina in 1956, is determined to upgrade and maintain the historic buildings in top condition.

The latest phase of this commitment is the ongoing work of re-roofing the buildings on the seaward and north sides of the marina.

In all, eight buildings are getting new aluminum roofing, including two that are also being extensively remodeled. Dave Nakagawara, the Port's Director of Capital Projects, said the work includes 40,000 square feet of new roofing.

"We're hoping for another 50 years," said Nakagawara. "We selected the best material we could find for durability. The color is a dark bronze which matches what is on the western buildings. It will keep Point Hudson with a nice, uniform, campus-style appearance."

The two western buildings, known as the Sail Loft and Puget Sound Express, received new metal roofs a few years ago.

When the federal government first constructed the quarantine station, roofing at the time consisted of asbestos-covered shingles. That made the re-roofing project expensive and complicated. A crew from Kanway Abatement and Demolition, based in University Place, was on site in June and early July removing the old shingles.

The Kanway crew was covered head to foot in protective outwear, wore respirators, and double-bagged the old shingles, before transporting them to a certified landfill in eastern Oregon, said Nakagawara.

Since then, Interwest Construction, with an office in Port Angeles, has rebuilt framing as needed, laid down a new layer of plywood, added blue waterproof sheeting, and is in the process of installing the new aluminum roofing. Nakagawara said another contractor has been treating existing copper roofing with preservative.

The expected total cost of the project is $1.8 million. Of that, $1 million is a grant from the Washington State Historical Society. Another $500,000 comes from the federal Environmental Protection Agency, and $300,000 comes

from local taxpayers who supported the Port's Industrial Development District (IDD) bond in 2019.

The re-roofing is only one of the capital projects at Point Hudson.

The building called the Duplex has been renovated and will soon become short-term vacation housing for visitors. The nearby Commander's Beach House, a longtime bed-and-breakfast, will see renovations that include a new HVAC system in the next few months. The Commander's Beach House will manage stays at the Duplex.

Those projects will be funded primarily by the Port's IDD funding, with help from a Local and Community Projects grant from the Washington state Department of Commerce.

Locals and visitors may soon benefit from more information about each building, said Nakagawara.

"One requirement of the heritage capital program grant is to promote access to history," he said. "Port Townsend Foundry is casting plaques for each of the Point Hudson buildings that will describe the former function of each of these buildings. For example, what's now the Cupola House was originally set aside for married attendants."



The Cupola House, one of the architectural gems of Point Hudson, was covered in waterproof sheeting before new metal roofing was attached. The building is now home to Point Hudson's moorage office and engineers.



The Duplex building has received extensive renovations so its two units can become short-term vacation housing at Point Hudson. The housing will be managed by the adjacent Commander's Beach House, which is also being renovated.

Boatyard BBQ

Sept. 17

The fourth annual Boatyard BBQ, a Port-sponsored party that celebrates the marine trades and welcomes home the commercial fleet, comes to the Boat Haven Boatyard starting at 4 pm on Thursday, Sept. 17.

A space in the middle of the Boatyard near the entrance of the Larry Scott Trail will be cleared for the party.

Food, including barbecued coho salmon and salad will be served for $20 per plate. Alcoholic and non-alcoholic drinks are available.

Many local bands have been lined up to take the stage for this public event, including Low Wire, Chloroform Rags and more.

"Gather with friends, neighbors, and members of our maritime community to celebrate the safe return of our fishing fleet, the bounty of the sea, and the hardworking people who keep Jefferson County's maritime industry thriving," said event organizer Daniel Milholland of the Production Alliance. "This is an evening to enjoy great food and live music, connect with the community, and learn more about the vital role the Port Townsend Boatyard plays in our region."

Find more details on the back cover of this edition.

Invisible danger

Boaters can prevent Electric Shock Drowning (ESD)

Electricity in the water at marinas can be fatal

On a hot day at a marina on a river near Portland, Ore., Kevin and Sheryl Ritz lost a son, Lucas. The 8-year-old was swimming. The cause was electric shock. The electricity came from a moored boat that, unknown to its owners or the Ritz family, was leaking 120 volts and current into the water near where Lucas swam.

That was in 1999.

Since then, Kevin Ritz, a marine master electrician, crisscrosses the country to educate boaters, marina owners, boatworkers and public safety officers about the risks of Electric Shock Drowning, or ESD.



Any marina might have stray 120 volt electricity in the water if there are unknown faults from shore power into moored boats. The Port of Port Townsend has posted signs like these at the top of ramps in the Boat Haven Marina.

Ritz also created and taught the Marine Systems Curriculum at the Northwest School of Wooden Boatbuilding for many years. He recently retired from that role. In late 2025, he put on a three-day seminar for Port of Port Townsend staff on the risks of electricity in the water at marinas.

The first lesson is also the easiest: Nobody should be swimming in a marina. There are too many potential sources of electrical current in the water in marinas.

Beyond that, understanding from where electrical current is coming, and what boat owners or the Port staff can do about it, is a challenging question. Determining the source of stray electrical current in the water is a complex task.

But what is simple is that water-borne electrical current in and around marinas can be fatal.

Why did Lucas die?

Whatever qualms Kevin Ritz has about talking about how he and Sheryl lost Lucas in 1999, he has decided the message is too important to tamp down. Most times when he talks about it, which he did recently with Port staff, he pauses to gather himself.

The Ritz family were liveaboards in a river marina. It was a hot day. Lucas and some other boys wanted to float downriver on an inner tube between the shore and the linear dock of the river marina. The Ritzes gave permission, with Sheryl, a nurse, walking the dock alongside the swimmers. Lucas wore a life jacket.

At some point, Lucas decided to get out of the water. He swam toward a dock finger with a ladder. He was now swimming toward the boats, most of which were plugged in to AC shore power, which carries 120 volts of electricity.

His mother heard a shout and a gasp. Other boys saw Lucas in distress, and swam toward him. They said later that some kind of invisible force would not let them come close enough.

Sheryl jumped in the water to grab Lucas. She was instantly paralyzed. She would have sunk except she had grasped Lucas' life jacket, which kept them both afloat.

People ran from all directions, including Kevin, who had been working on his boat. They got both Lucas and Sheryl out of the water. Sheryl could move again, so Kevin immediately began CPR on the boy. He didn't know until afterwards that Lucas had been dead in the water.



Kevin Ritz, master marine electrician, described to Port of Port Townsend employees the importance of discovering sources of electricity in the water at Port-owned marinas like the Boat Haven.

He'd been electrocuted.

Kevin spent the next few days, together with another marine electrician and law enforcement, investigating. One boat had been plugged in to a second boat with an extension cord. The safety ground wire of that extension cord, unknown to anyone, was broken.

That meant that while 120 volts went onto the boat, its only path to return to its source – a transformer on the dock – was through the water. If the safety ground had been intact, it would have tripped a breaker and power to the boat would have been shut off.

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New standards affect shore power for boaters

A boat comes into a marina and ties up at a slip. It might be a visitor for a night or two, or it might be a boat returning to its permanent slip.

At the slip is a pedestal that offers shore power – 120 volts at 30 amps (typically) of AC power. The skipper attaches a cable to the pedestal, bringing AC power to the boat. All good.

But…

National standards have tightened. If a boat is found to be leaking electricity into the water, boats lacking safety equipment might not be allowed by marina staff to plug in.

The concern? A boat might be emitting electricity into the water, and that electricity might be sufficient to kill a swimmer through Electric Shock Drowning (ESD).

The new standards come from the 2026 National Electrical Code (NEC), which governs the use of AC electricity at marinas. The Port of Port Townsend operates three marinas – the Boat Haven, Point Hudson, and the Herb Beck Marina in Quilcene. All of these marinas, and thus all of the boats in those marinas are asked to comply with NEC 2026.

The impact of the new standards of NEC 2026 on the Port's marinas is four-fold:

1. The Port is required to have a measurement device that determines the amount of leakage of electrical current into the water from any boat.

2. Under NEC 2026, all new dock construction at marinas are scheduled to provide shore power pedestals equipped with breakers that will trip if there is an imbalance of 30 milliamps between power coming in and power coming out of the boat. The feeder wires that supply power to the pedestals are also to have ground fault protection devices. These breakers would shut power off if 100 milliamps of power imbalance is detected.

3. In addition, transformers must have disconnect levers that can manually shut power off in an emergency.

Do boaters need isolation transformers?

Isolation transformers are a tool proven to eliminate most risk that a boat leaking AC current into the water may have. An isolation transformer on a boat, through a magnetic process, means that a boat does not directly receive AC power from shore power but instead produces its own power, as if it has its own transformer. If there is a fault in this system, there will be no electrical power emitted by the boat into the water.

NEC 2026 does not mandate that boaters install isolation transformers. But, according to Port of Port Townsend Harbormaster Kristian Ferrero, the best solution for any boat to prevent leakage of power into the water is with an isolation transformer.

"It makes sense to do it all at once," said Ferrero.

Ferrero can envision a future in which a boat arrives to plug into shore power, but a power imbalance trips a shore power pedestal. That boater might have to rent a temporary isolation transformer from the Port, he said.

Master marine electrician Kevin Ritz said an isolation transformer costs about $600, and its installation by a marine electrician would cost about $1,000. That's a modest expense, he said, for a safety measure that can save a life – perhaps your own.



AC electrical transformers like this one are at the top of each ramp at the Boat Haven Marina.



Inside the transformer are breakers that can turn dock power off in the event that someone in the water notices or is affected by stray AC electrical current.



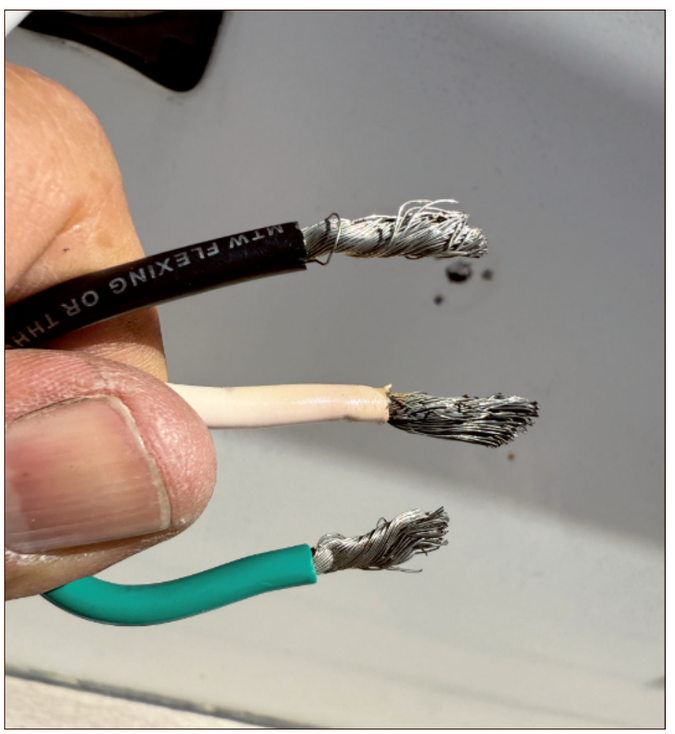
Shore power pedestals, usually with two AC electrical ports for side-by-side boats, bring power onto moored boats. The pedestals also have on-off breakers to be used if needed.

Marine electrical terms aid understanding

Marine electrical systems and the science behind them are complex enough that entire textbooks try to explain them. The abbreviated list below covers some highlights. But readers should know there are many exceptions, and those exceptions can be fatal. The best option is in-depth training, or to hire an American Boat and Yacht Council (ABYC) certified marine electrical technician.

AC = Alternating Current
This is the land-based, more powerful (and dangerous) current, usually at 120 volts, or sometimes 240 volts. AC power usually comes to boats when they are at a dock and hooked up to shore power. AC power can also be produced by an on-board generator, or produced from boat batteries by an inverter that transforms 12 volt DC power to 120 volt AC power.

DC = Direct Current
This is the less dangerous, lower-level current produced by batteries, usually at 12 volts. DC power is stored in batteries via a chemical process until used to do something, like start a boat engine or switch on a DC light. The batteries can be recharged many ways, including by hooking a charger to shore power, by running a boat engine equipped with an alternator, or via solar or wind. There are many types of DC batteries.



The wiring that brings AC power, usually 120 volts, to a boat from a shore power pedestal is usually (but not always) color coded in this way: Black is the "hot" wire; white is the "neutral" wire; green is the "ground safety" that protects people in the case of a fault or short.

Ways to measure electricity

Voltage: Measures electrical pressure, i.e. the force the pushes electricity through a wire. AC is often at 120 volts; DC is often at 12 volts.

Amps: Measures the rate of flow or current of electricity — how much is moving through the wire per second.

Frequency: AC power is also measured by frequency. In North America, AC power's frequency is 60 cycles per second, also called 60 hertz. DC power does not alternate direction, so its frequency is 0.

AC tools

GFCI = Ground Fault Circuit Interrupter
Households and boats using AC power often have GFCI outlets. GFCI trips to "off" if it senses a tiny (5 milliamp of fault current) interruption of the AC current. Such an interruption indicates a problem that could be dangerous. A GFCI trips quickly to reduce the danger of electrocution.

ELCI = Equipment Leakage Current Interrupter
An ELCI is a device often installed on boats near the incoming shore power. If it detects a 30 milliamp difference in the current coming into the boat via the "hot" wire and the power returning to the pedestal via the "neutral" wire, it will trip off and cut off power. Any difference is a sign that the boat is leaking AC power into the surrounding water. A ground fault and broken ground would trip the ELCI.

Isolation Transformer

This is the gold standard of bringing electricity aboard a vessel safely. "A properly installed isolation transformer aboard the boat solves the issue," said master marine electrician Kevin Ritz. "There should never be stray current in the water trying to get back to a land-based transformer, taking the dangerous water pathway." An isolation transformer passes AC shore power into a boat not through conductors but through magnetic field, therefore creating a newly derived source of power which is not directly connected to the AC power provided through a shore power pedestal. Leaking current stays within the vessel, and minimizes the risk that the surrounding water might become a pathway for electricity.

AC Wiring

AC wiring is standardized. (Note that the wires themselves are almost always copper – colors are the plastic or rubber insulation coating the wires.)

Black: The "hot" wire -- The hot wire provides 120 volts of AC power.

White: The "neutral" wire -- This is the grounded conductor wire. It is the return or outflow path of current that has been pushed through the "hot" wire and now returns to its source. For boats, this is usually the transformer.

Green: The "ground safety" wire -- referred to as the grounding conductor. During normal operation of AC power, it has no role – it's a safety backup in case something prevents current from returning to the transformer via the "neutral" wire. If there's a fault somewhere in the system and AC power tries to return to its source via the ground safety wire, a breaker should immediately trip and cut off all AC power.

Effects of AC current on the human body

Kevin Ritz discussed impacts on the human body in terms of electrical current, expressed as amps. An amp is the amount of electrical current that flows through a wire in a second. A space heater draws 10 to 12 amps. A typical dryer draws 30 amps. A milliamp (written as mA) is the measure of 1,000th of an amp.

1-3 milliamps = the skin tingles

10-20 milliamps = a person cannot let go of the charged object

18-20 milliamps = a person is paralyzed; can't even call for help

50-65 milliamps = heart fibrillation; can be fatal

100-plus milliamps (100 milliamps is 1 amp) = Fatal

DC tools

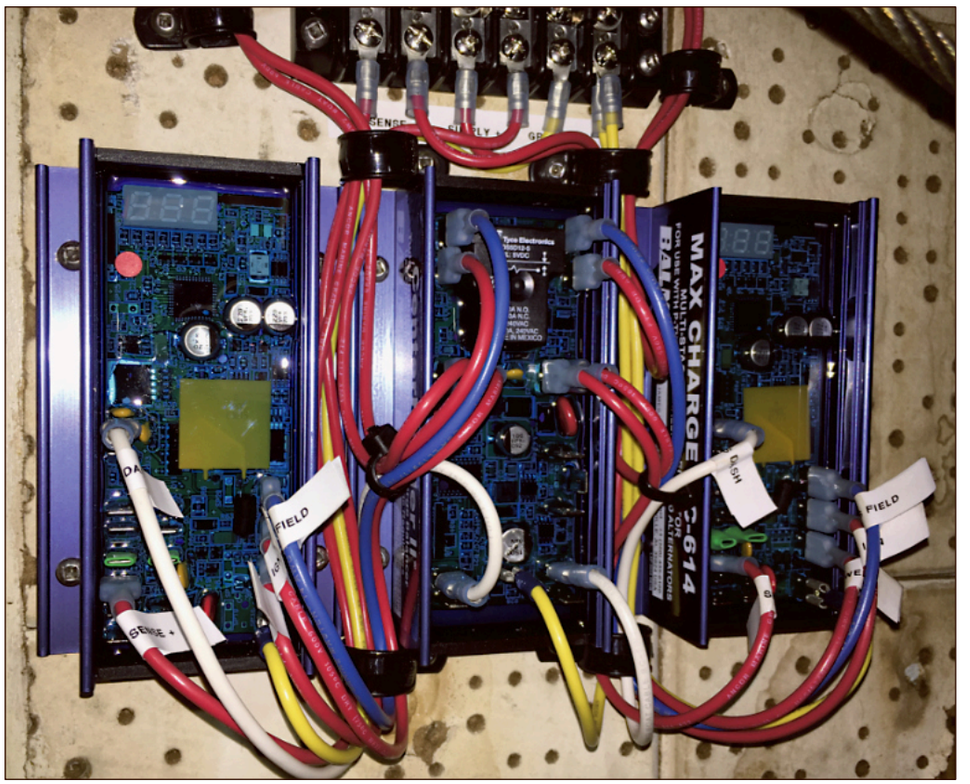
Galvanic Isolator
This tool targets the impact that excessive DC (Direct Current) can have on the metal parts of a boat that are exposed to water (propellers, shafts, through-hull valves, etc.) It blocks low-voltage DC currents that can corrode dissimilar metals on a single boat, or the metals of a nearby boat. Note that a galvanic isolator also plays a role with AC power, as it sits on the AC safety ground and blocks low-level galvanic current to prevent corrosion from boat to boat.

DC Wiring

There are also variations in how DC wire color coding has been handled over the years, or by boat owners. At a minimum, DC wires should be labelled. All DC wires aboard boats should be made of stranded copper wire, be of the right size and include over-current protection devices such as fuses or breakers. Because DC wiring usually carries 12 volts of power, not the 120 volts of AC power, touching a DC wire is noticeable but usually not fatal.

Red: The "hot" wire
For DC's low-voltage systems, red usually carries electricity to a switch or circuit.

Yellow: The return wire
Yellow wires carry the low-voltage power back to its source, usually a boat battery. In past times, the return wires were often black.



A well-wired boat has well-ordered wiring that is clearly labelled.

Ritz: *Boaters' diligence can save swimmers' lives*

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"Due to lack of a safety ground, the breaker never tripped," said Kevin. "This fault put 120 volts of AC power into the water, via the underwater metals of the boat." Lucas, as he swam toward the dock, entered this electrical field.

(In the event a marina swimmer seems to have encountered electrical current in the water, Ritz warns that a person on the dock who tosses a life ring and pulls the swimmer toward the dock may be making a mistake. The rescuer might be pulling the swimmer toward higher voltage. A better option is encouraging the swimmer to move away from the dock and its boats.)

How electricity gets in water

A boat safely uses AC power from a shore power source through this sequence:

1. A transformer often located on the dock or on the shore at the foot of a dock supplies 120 AC volts to shore power pedestals on the dock.

2. The boat is plugged into one of these 120 AC volt pedestals.

3. Breakers on the pedestal and the boat are flipped on. Now 120-volt AC power flows onto the boat via the "hot" wire. There it can run various AC appliances, such as heaters, lights or a battery charger.

4. The electrical current (called amps) flows back to the pedestal via the "neutral" wire and from there back to the transformer, completing the loop that electrical power always seeks – to return to its source.

5. If the normal electrical circuit has a fault – a short circuit, or the AC hot wire comes into contact with a DC wire or other metal surface, for example – the "safety ground" wire (often insulated in green) should trip a breaker. That cuts off all power from the loop. In that way, the safety ground wire saves lives and prevents electrical fires.

There are several ways that AC power, instead of returning safely to the transformer, can instead leak into the water of a marina. One is faulty wiring in the marina itself. For example, if a wire from the shore-based transformer that feeds a dock-based pedestal is damaged, and touches the water, electricity can enter the water.

More likely is a fault in the AC wiring of a boat plugged into a shore power pedestal, as was the case for Lucas Ritz.

"Electricity will take all conductive pathways to whence it came," said Kevin Ritz. "When something fails, the green safety wire is the only thing that protects us" unless a boat is equipped with some other system of ground fault protection.

In the case of Lucas in 1999, Kevin later found that an AC wire carrying 120 volts and with damaged insulation was in direct contact with a DC wire whose insulation had burned off. The DC wire was connected to many metal parts of the boat, including engines that were under the water. The boat was now emitting 120 volts into the water.

Kevin has found that the electrical leakage in the water that hit Lucas Ritz is not unusual.

"In every marina I've tested," said Kevin Ritz, "I have always found AC leakage." At one time Kevin did random sampling at marinas near where Kevin was killed. He found that 13 percent were leaking potentially lethal AC into the water.

SEPTEMBER 17TH • 4PM – 9PM
PORT OF PORT TOWNSEND

Join us for the 4th Annual Boatyard BBQ! Gather with friends, neighbors, and members of our maritime community to celebrate the safe return of our fishing fleet, the bounty of the sea, and the hardworking people who keep Jefferson County's maritime industry thriving.

Entertainment



6:00PM
Lowire

8:30PM
Chloroform Rags

Dinner

Come hungry for a delicious Coho salmon BBQ dinner!

Each plate includes Coho salmon, fresh salad, dinner roll and a bubbly water.

$20/plate
while supplies last
pre-purchase online

Additional Food Vendors

Java Gypsy Coffee

Bar Car
Cash Bar with Beer, cider, wine and cocktails

Friendly Nettle

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Biking and walking encouraged. Limited Parking.

The Production Alliance