



End-of-Life Vessel Material Management Guide



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he information contained in this document is intended to assist public officials, marine businesses, waste processing firms, environmental organizations, boat owners and other interested parties in the development of partnerships and practices to recycle end-of life fiberglass boats. The advice and information provided are the result of a pilot project organized by the RIMTA Foundation, a non-profit organization affiliated with the Rhode Island Marine Trades Association.

The Rhode Island Fiberglass Vessel Recycling Pilot Project was established by RIMTA in 2018 as a direct response to growing challenges related to solid waste management solutions for boats. Since then, the pilot project has collected, tested, processed and delivered fiberglass materials from a variety of end-of-life and abandoned or derelict boats to a cement manufacturing facility in Holly Hill, South Carolina operated by LafargeHolcim (LH). When co-processed by LH subsidiary Geocycle, the fiberglass boat materials provide both thermal energy and raw material replacement values that reduce the environmental impacts of creating virgin cement products.

Laboratory analysis and tests with RIMTA partners have verified the beneficial values of fiberglass boat material as an alternative fuel resource. Close partner collaboration has also vetted the dismantling practices and use of these materials in a cement kiln from an environmental, human health and safety standpoint.

 MARINE BUSINESSES



IN-STATE TRANSPORTATION

PREPARATION & DISMANTLING

RECYCLING FACILITY



■ Liquid Waste Pump-Out • Hazard Removal • Ancillary Metal Removal
 ■ Pre-existing Recycling Outlets • High Value Scrap • Hardware, Engine Salvage



■ Initial Size Reduction • Pre-Process Shredding • Short-Term Storage

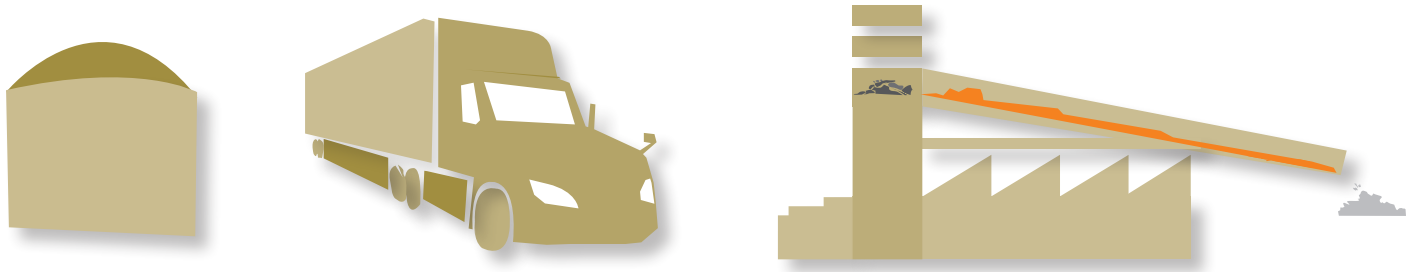
RHODE ISLAND MARINE TRADES ASSOCIATION



To launch the pilot project, RIMTA organized and coordinated a group of regional business partners to conduct boat collection, preparation, processing and transportation. The work was supported by the Rhode Island Department of Environmental Management and the Rhode Island Resource Recovery Corporation. The collaborative effort resulted in a model that can serve as the basis for replication of boat recycling activities in other states or regions. RIMTA works cooperatively with the NOAA Marine Debris Program to share the pilot project's experience and data by working with various state and regional authorities exploring similar methods in different settings around the country.

Initial steps toward the adoption of this approach in the United States have focused on utilization of fiberglass materials for cement production. As technologies and research commitments evolve, it is likely that a spectrum of beneficial reuse and recycling options will become available to those managing end-of-life vessels. The process can also apply to other products that utilize fiberglass composite materials. In 2021, RIMTA was named as a marine industry partner in a REMADE Institute Project designed by ACMA to evaluate a nationwide composites recycling supply chain capable of serving multiple material end-user types.

SALVAGE - WASTE MANAGEMENT



INTERSTATE TRANSPORTATION

END-USER FACILITY



■ Transportation Limitation • Fuel Blending • Material Analysis • Kiln Application

“ Millions of recreational fiberglass boat hulls mass-produced since the 1960s have begun to reach-end-of-life status and accumulate in coastal communities around the United States. ”



For vessel owners, marine businesses and waste managers, little information or infrastructure exists to support the pursuit of sustainable reuse or recycling for all components and materials.

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illions of recreational fiberglass boat hulls mass-produced since the 1960s have begun to reach-end-of-life status and accumulate in coastal communities around the United States. The population of the expanding ‘legacy fleet’ has been exacerbated in recent years by losses resulting from major hurricanes. Currently, the destination for fiberglass boat hull materials is typically a local landfill. Even when crushed and buried in a landfill, non-degradable fiberglass hulls and their associated components consume valuable space and present risks for the contamination of soil and water resources. An additional problem stems from an increasing number of vessels that are abandoned or left in dereliction by owners with limited disposal options; these craft can pose pollution and navigation hazards as well as potentially high clean-up costs for local and state governments. In view of the trend for closure of landfills and the historic increase in fiberglass boat manufacturing across the U.S during the 1980s

and 1990s, the breadth of these impacts is likely to deepen.

To meet this challenge, local marine industry businesses, waste management stakeholders and transport companies can be brought together as logistic partners in collecting, sorting, preparing and shipping materials for recycling or reuse in an efficient manner. In supporting the organization of these efforts, marine trade associations, environmental authorities and/or local and state government agencies can also take part in partner coordination. Such a partnership network is essential to creating a more sustainable approach to vessel material recycling and reuse.

As a result of these processes, fiberglass boat hull “recyclate” can be reused as an alternative material and thermal resource in industries such as cement manufacture. For cement plants, this recyclate offers the added benefit of reducing pollution and raw material needs for sand, alumina and lime.



VESSELS HAVE VALUE AS A 'MATERIAL BANK'

Modern recreational vessels contain a broad array of composite materials, hardware, ancillary components and accessory equipment. In some cases, traditional recycling pathways can be utilized to mitigate the potential impact of these items and materials. In other cases, direct salvage and reuse of recovered products and parts is feasible.

Because no two vessels are exactly alike, the tools and level of labor required to prepare for dismantling and essential separation will vary on a case-by-case basis. Knowing how to identify and navigate common vessel materials can help marine and waste sector partners approach dismantling tasks and prepare an effective material management plan. Vessel information, both from legal documentation as well as manufacturer information (owner's manuals, class specifications, etc.), can assist in the verification of such a plan. More information on documentation can be found in the support sections below for Owners and Marine Businesses.

MATERIAL MANAGEMENT PLAN

Recreational vessels vary widely in their size, design and layout. In addition to knowing the potential make-up of the 'material bank' in an end-of-life vessel, it's important to have specific protocol for identifying any potential hazards that may be associated with their separation and collection. Each material type presently collected and segregated should have an established destination that can facilitate its beneficial reuse or recycling. These destinations should be evaluated and verified before any deconstruction activities begin.

Determination of potential vessel impacts and risks associated with material can be accomplished through a comprehensive vessel walkthrough and inventory review. It is important to make note of the variety and volume of the materials present in the vessel, and the tools or techniques that will best serve their extraction. This step is also critical to establishing plans to address any hazards or potential risks to those involved in deconstruction.

RISK ASSESSMENT

Physical - Be aware of the vessel's structural integrity as you inspect and review its contents. Avoid and make note of areas that seem unstable or physically compromised. Do not board or climb on a vessel if there are clear impacts to its structural integrity. Use a visual assessment to determine the potential level of risk. Be aware of the physical signs that denote the delamination of exposed composite or rotting of structural wood.

Environmental / Biological - Determine any existing or potential sources of immediate environmental impact. Check tanks for fuel and waste, arranging for an associated pump-out if necessary. Ensure that storage spaces are free from waste or left-over products. If standing water is present, look for signs of oil sheen or contamination.

Hazardous Materials – Some end-of-life vessels can contain chemical or biological hazards that pose a risk to the health of those participating in deconstruction. The use of personal protective equipment (mask, gloves, eye covering, hard hat, etc.) is recommended when assessing an end-of-life vessel.

“These composite products that are better, faster, stronger -- they don't go away. Their best qualities can become their worst.” ”

– Wendy Mackie, former RIMTA CEO



MATERIALS AND DISMANTLING

COMPOSITE AND NON-COMPOSITE MATERIALS

Among the primary vessel components, fiberglass and other composite materials have historically been the most difficult to manage sustainably at end-of-life. With new options for



the beneficial reuse of this material now more accessible to marine industry stakeholders, steps can be taken to ensure proper collection. In the first step, a fiberglass or composite hull is prepared through stripping out all non-structural components and non-composite materials. In many cases these components and materials can be separated

and set aside for reuse. Among them, metal is the primary deterrent to composite material processing, and its removal must be prioritized.

Prepared and stripped composite hulls require a reduction in size so that transportation of materials can be accomplished effectively. Heavy machinery is the preferred tool for the crushing of hulls for storage in a 30-yard roll-off container. Efficient crushing will allow for 3-6 vessels of varying size in each container. Composite material that has been taken off the vessel in the form of hatches, doors or other removable items should also be included with the larger crushed hull segments.

RECYCLING AND REUSE OF METALS

Metals, both ferrous and non-ferrous, are common components in vessel construction. Stripped metal can be shipped



to a number of outlets; scrap markets for high-value material (lead, steel, brass, iron, copper, etc.), traditional recycling outlets for common material (batteries, stainless steel, aluminum, etc.), and direct salvage for resale or refurbish (engine parts, rigging, winches, electronics, etc.).

Many sailboats of modern design have large “keels” designed to balance the vessel below the waterline. Keels must be removed using specialized equipment or heavy machinery, and cannot move forward with associated composite materials.

While smaller, more accessible items like bow rails, cleats, eyeholes, and tracks can be easily removed by hand, other sources of metal including screws, fasteners and wiring embedded in the fiberglass itself are nearly impossible to remove in entirety.

SEPARABLE AND INSEPARABLE WOOD

A variety of wood and wood core materials can be found in the makeup of a recreational vessel. Some of these components are embedded in fiberglass and inseparable from their associated





structures. Other separable sources of wood often include fixtures, trim, decking, furniture and rigging accessories. In either form, wood is an organic material that has recycling value. When embedded and inseparable from fiberglass it can complement the alternative value of recovered material. Non-structural components that can be easily removed are collected and managed through traditional wood recycling outlets. Wood core and embedded that cannot be removed can proceed with recovered fiberglass toward the next stage of processing.

FABRICS

Fabrics make up a small but visible portion of vessel material composition. On sailboats, large polymer-based sails and cloth sail covers are often recovered at end-of-life. The reception and reuse of polymer sails is currently limited to specific regional programs. Cloth, marine vinyl, canvas and other forms of fabric are commonly found in vessel upholstery. Fabrics that are free of mold and other forms of contamination can be collected and redirected toward traditional recycling outlets.



ELECTRONICS

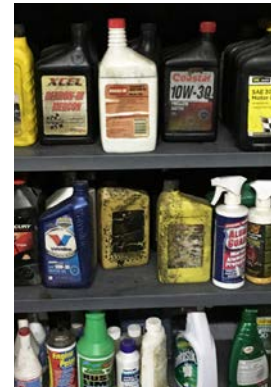
Depending on the age of the vessel, electronic components such as GPS computers, fish finders, depth finders, radios, audio systems, lighting, refrigerators, stoves and other appliances may be present.

These items are generally identifiable and accessible within the vessel. Depending on the age and condition of these items, direct salvage for resale is possible. Recycling of these materials through existing e-waste outlets is an equivalent option. As is the case with metals, it is important to prioritize the removal of these items in order to prevent their inclusion in the next stage of processing.



ANCILLARY ITEMS

It is not uncommon to find items and products consistent with recreational boating and vessel upkeep inside an end-of-life vessel. These items often include but are not limited to, personal flotation devices, flares, oars, rope line, anchors, gas containers, paint cans, cleaning products and fishing equipment. Some of these products (gas, paint, cleaning products, etc.) are hazardous and must be stored or immediately disposed of with additional protocols in place. Other items should be managed based on the potential recyclability or alternative management of their primary material (metal, plastic, etc.)..



“Having proof of ownership is the first critical step to enacting a material management plan and associated deconstruction strategy.”



MANAGING THE PROCESS: Boat Owners, Marinas & Boatyards (Marine Businesses), Salvagers/Waste Processors, and Transport Services

INFORMATION FOR OWNERS

Preparing a vessel for end-of-life management requires necessary collaboration with the individual or entity legally designated as the vessel owner. Owner consent is critical to initiating the end-of-life management process, and without stakeholders risk the potential of future liability for the untimely disposal of a vessel. A Title of Ownership is the most common form of legal documentation for recreational vessels. These titles can be supported by registration records in a particular state where the vessel was used. In the case of a missing title, or limited information on the official owner (i.e. abandoned vessel), only the owner of the property where said vessel resides can apply for ownership status.

Having proof of ownership is the first critical step to enacting a material management plan and associated deconstruction strategy.

If a vessel has historically been stored or maintained by a specific business (marina, boatyard), owners should utilize the existing resources and support of those businesses to procure end-of-life management options. Before activities begin, owners should make an effort to secure any personal items, ancillary products or parts / equipment that may be of personal value. Preparing the vessel for review and initial dismantling means reducing all potential for hazard or contamination. This includes inspecting any holding tanks for remaining liquids or gas, and notifying any business staff on the need for a pump-out.

If a vessel has been kept at a private residence, in a garage or backyard, additional businesses can provide support in accessing end-of-life management resources. These businesses include but are not limited to marine salvagers, haulers and

other transportation. If a vessel is on a trailer, please inspect and ensure the integrity of the trailer before you attempt to use it for transportation.

Specialized organizations and boat owner associations may offer donation programs with the support of regional partners. In some states, relevant authorities offer annual vessel turn-in programs or local amnesty periods. In some cases, transportation will need to be coordinated separately to participate.

Owners are responsible for gathering and disclosing critical information that will support the establishment of a vessel management plan regardless of the business or third party responsible for undertaking those steps. When contacting a third party, be sure to include as much information as possible on the vessel size, type, location and transportation needs. If immediate hazards are present (full waste tank, gas tank, etc.), please disclose them with as much detail as possible.

INFORMATION FOR MARINAS/ BOATYARDS (MARINE BUSINESSES)

Obtaining consent and proper documentation of ownership is key to providing any type of vessel dismantling or material management services. Typically, businesses such as marinas or boatyards have this information on file for existing customers and can gain verification quickly. If a boat is abandoned, derelict or transient, additional steps may be required to verify ownership status and gain consent.

Boat registration and title schemes vary from state to state. Depending on the origin or current location of a vessel, support



in accessing proper documentation may be provided by any number of state agencies and/or law enforcement authorities. Abandoned boats are also subject to state-specific policies and protocols. Gaining title and legal authority to manage an abandoned vessel often requires outreach to the last-known owner, periods of public notice, legal proceedings and other steps to establish permission.

Establishing basic information and background on a candidate vessel is another important step for marine businesses participating in initial recycling logistics. This includes but is not limited to vessel dimensions, manufacturer, model, location, transportability and existing hazards. Businesses should work in collaboration with current vessel owners, if possible, to review and verify any information provided.

VESSEL PREPARATIONS

Marine businesses are well-equipped to support the development of a material management plan for any candidate vessel. In addition to hazards, inventorying the presence and prevalence of different materials is important to their efficient recovery. Identifying and marking the locations of components that are embedded-or-difficult to remove such as fuel or water tanks can help simplify later efforts to separate materials.

The removal of immediately-accessible metal items such as cleats, bow rails, ladders, winches and blocks is an important task that can be completed by marine businesses at the discretion of vessel recycling coordinators. Depending on the availability of a salvage partner to complete the deconstruction of vessels, marine businesses like boatyards are often capable of safely overseeing the initial removal of metals, electronics, fabrics and other ancillary materials outside a hull's construction.

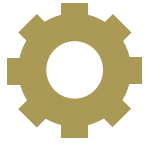
ABANDONED AND DERELICT VESSELS

Truly abandoned or derelict vessels (ADV) present additional logistic hurdles for marine businesses to consider when seeking a lifecycle management solution. ADV policies, their respective protocols and the authorities that enforce them can vary from state-to-state. It is important that any ADV slated for end-of-life management by a marine business be appropriately classified as such before activities commence. Determination of that status and any links to a potential owner must be prioritized by law. In some states, this requires notification phases and waiting periods before disposition or a transfer of legal ownership to the marine business seeking a solution for end-of-life. Several states including Rhode Island offer funding for ADV management projects, with specific selection criteria (which often limit request for proposals to municipal agents). As end-of-life practices for vessels pivot toward material reuse and recycling, it will be important to advocate for support from existing ADV funding sources to divert materials away from landfill.

TRANSPORTATION

By nature, ADVs can pose complications when being collected or removed from their point of origin. Many marine businesses are familiar with the potential impacts of long-term outdoor exposure to a vessel. ADVs should be drained of any standing water, and vegetation or overgrowth should be removed to the greatest degree possible. Assess the integrity of boat stands, trailers, cradles or other structures before moving the vessel. If a vessel is partially submerged or on the ground, case-specific evaluation will be required to determine the need for salvage or transportation support.

“The specialized tools and heavy machinery of a salvager/waste manager may have a greater capacity for achieving successful material separation than many marine businesses”



INFORMATION FOR SALVAGERS/ WASTE MANAGEMENT COMPANIES

MATERIAL SEPARATION

The specialized tools and heavy machinery of a salvager / waste manager may have a greater capacity for achieving successful material separation than many marine businesses. The removal of fixtures, wiring and other sources of metal is the highest priority when working to isolate the value of composite hull material. These items retain scrap value and can be used to recover costs associated with the deconstruction process.

Like metals, other materials outside the hull's primary construction should be removed and organized (Wood, Fabric, Ancillary) for delivery to a sustainable end-user or municipal recycler. While some materials will not be recyclable, it is important to give due consideration to each of the components collected.

Additional products, boating equipment and parts can be saved for further repair or resale. In some cases, older brands and their models command high demand for replacement or secondary parts. Several online inventories can help to determine the potential value of a part or product recovered during the deconstruction process.

HAZARD IDENTIFICATION

If a vessel is arriving from a marine business for deconstruction, require a verification that proper hazard mitigation has occurred. This includes identifying the presence of storage tanks and their contents (removing via pump-out before arrival if possible), the presence of cleaning products, batteries, paint or other toxic products that could not be safely managed by a marine business.

If a vessel is being collected from an individual owner, additional lengths should be taken to review and verify the presence of potential hazards on board. Particularly, internal cabins or storage spaces should be treated with caution. Because owners do not have the capacity to remove or manage any existing hazards, it is important to ensure that they can be contained while the vessel is moved to a secure location. If a vessel cannot be moved without potentially causing a spill of fluid or other form of contamination, additional support should be requested from a hazardous waste manager.

PROCESSING

The recycling or beneficial reuse of constructive hull material requires specific preparations in order to capitalize on the physical or chemical values of what has been recovered. Depending on the characteristics of the end-use case, these requirements specific to material sizing and consistency may vary. For example, the Rhode Island Fiberglass Vessel Recycling Project was mandated by cement industry partners to reduce the size of the recovered hull materials to a consistency of parts no greater than two inches in width or length (-2"). This meant working with a firm that specialized in shredding and grinding construction debris in a similar fashion to achieve the necessary standard. In some cases, prepped vessels can be delivered directly to a waste management partner for material separation and processing. In other cases, it may be more efficient for a specialized salvager to support deconstruction before further pre-processing support from a waste management partner.

It is important to ensure that processing efforts are completed by a partner with the proper equipment to grind or shred vessel materials in a safe and successful manner. In some



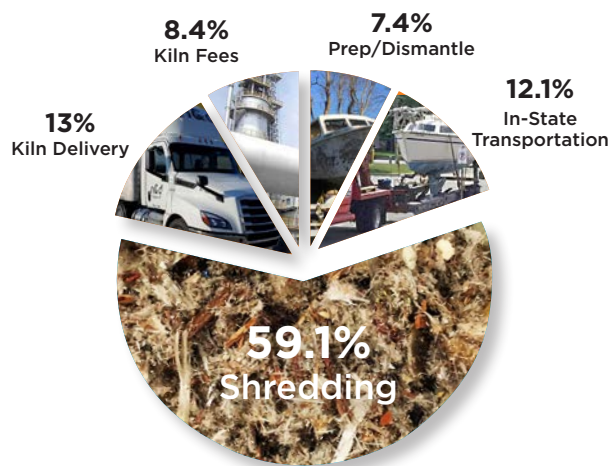
The use of heavy equipment and other specialized waste management resources can further support efficiency during important material separation activities.

EQUIPMENT AND RESOURCES

Most salvagers and waste managers have access to specialized tools (circular saws, vice grips, pump-out hoses, etc.) and heavy machinery (fork-lifts, front-end loaders, tow-capacity, back hoes, horizontal shredders, hammermill grinders, etc.). Not only can these tools assist in the movement and storage of collected materials, they can also assist in the separation process itself. By breaking boats down to manageable sections with these resources, the separation of recyclable, salvageable and unusable components can take place rapidly.

“All delivery of processed recyclate to U.S. end-users thus far has centered around over-road delivery.”

AVG. COST BREAKDOWN



cases, material end-users may request to visit or observe facilities where these actions will take place. Sizing is agreed upon in advance and can be incorporated into a memorandum of understanding or work agreement. Typically, pieces of hull material several feet in length and width can be fed (by hand conveyor or by heavy machinery) into the equipment being used to reduce it to the proper size and consistency. As material is staged for processing, be sure to conduct a final visual assessment to determine if any non-hull material items (metals, plastics, fabric, ancillary) can be removed safely by hand. This is important not only to the finished quality of the processed material, but to the function of the equipment being used.

STORAGE AND TRANSPORTATION

Before they are shredded, separated hull materials can be isolated and stored in advance of processing. The Rhode Island Fiberglass Vessel Recycling Pilot Project had success using 30–40-yard dumpster-style containers to hold crushed hull materials. Depending on the size of the vessels in question and the efficiency of the heavy machinery employed, these containers can hold upwards of five tons. It is important to

consult with any waste management or processing partner to determine their capacity for material storage before shredding, and the timeline over which they are able to manage the anticipated volume. In some cases, salvage or marine businesses can stage separated hull materials and deliver them to the processing site on an incremental basis as vessels are managed one-by-one.

Processed recyclate material has historically been stored in loose, dry bulk quantities until enough volume is generated to trigger an end-user delivery. Limiting the accumulation of moisture should be a priority in preserving the physical / chemical value of the recyclate. The desired tonnage of each end-user delivery should be determined prior to any existing agreement with the end-user. The delivery of processed recyclate may also be influenced by over-road tonnage limits and state restrictions of containment. Dry bulk hull material recyclate has historically been transported loose using an open trailer with a cover attachment. This process is efficient for loading with heavy machinery and unloading quickly upon arrival. Challenges exist around the maximization of trailer space with a fluffy, fibrous and lightweight material. Compacting this material through baling or the use of canvas tote bags may help improve the transportability of processed vessel recyclate, but has not been utilized to date as part of the RIFVR Pilot Project.

All delivery of processed recyclate to U.S. end-users thus far has centered around over-road delivery. Access to future end-user sites and facilities will present the potential for exploring new protocols for rail and marine transportation. Railway cars and shipping containers present two cost-effective forms of material delivery in comparison to trucking. When coordinating with an end-user, be sure to determine all potential transportation access points and the material preparations or storage practices and requirements that may differ between them.



Direct observation and input from end-users partners can help ensure that appropriate measures are in place to achieve any desired processing standards. Such evaluations can also help promote transparency and establish expectations for future work.



RECYCLING PARTNER IDENTIFICATION

PARTNER CATEGORIES

The identification of potential contributors to a partnership network capable of conducting critical recycling activities requires the consideration of several support categories. Each plays a critical role in determining the day-to-day completion of recycling tasks, ensuring compliance with relevant regulations and providing administrative, logistic, or financial support.

The development of a partnership network is reliant on what resources are available to support the completion of critical activities. Unless the project is a direct recipient of state or federal funds, partnership networks require funding support through grants, in-kind services, or other awards. The cost of specific beneficial reuse or recycling activities can vary widely based on geographic and other economic variables. Relationships with state or local agencies, or industry funding sources that can encourage marine industry or waste sector participation, are particularly helpful. In-kind resources leveraged through subsidized pricing, donations of time or equipment can also help offset cost-per-vessel. Non-profit organizations closely associated with the marine environment, sustainable boating and ocean stewardship are particularly well-aligned to answer and amplify funding requests. Locally, banks, research universities and state agencies can also provide financial, administrative, or other types of support.

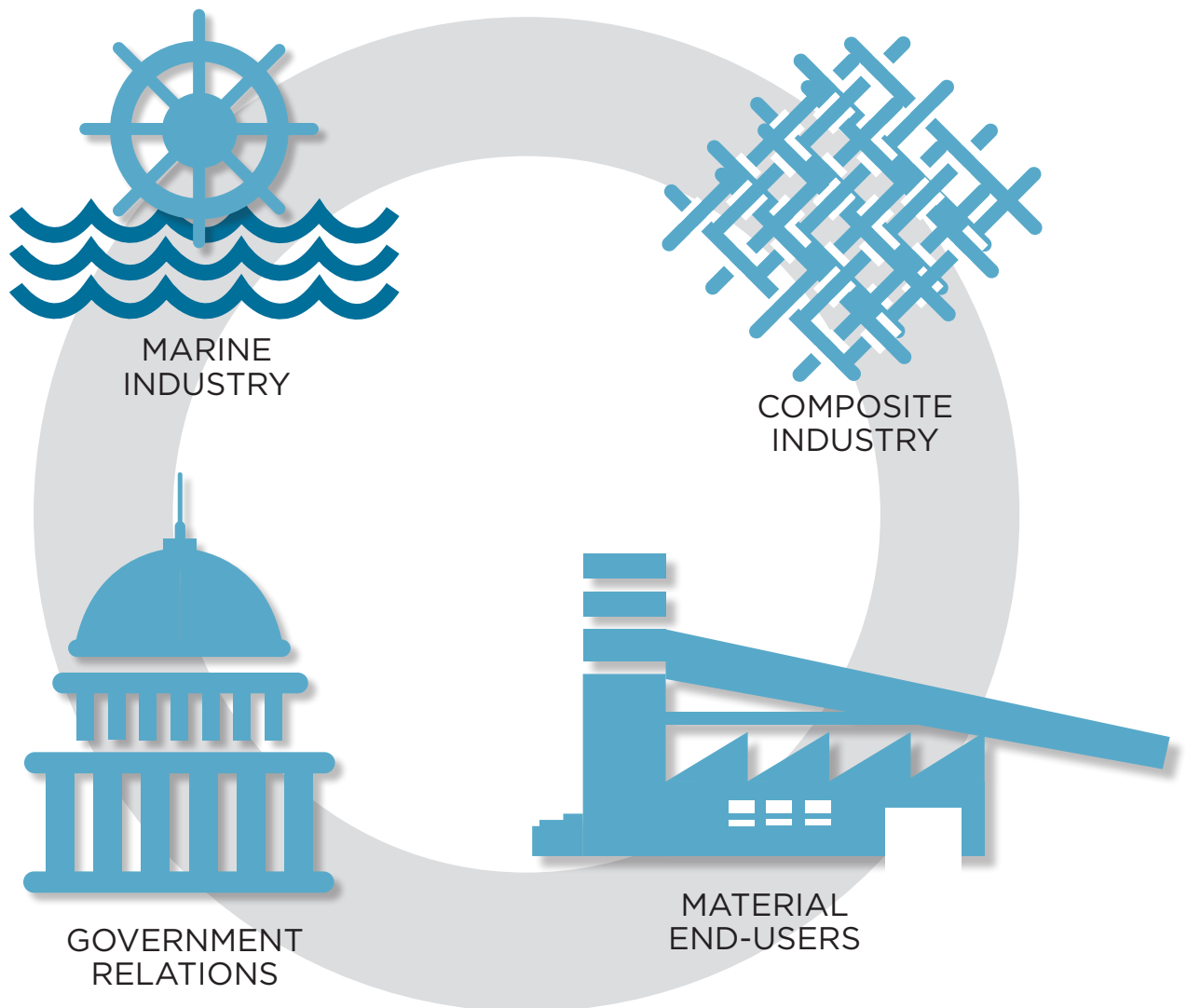
Core logistical or task partners directly contribute to all aspects of vessel identification, collection, deconstruction, processing and transportation. These businesses are either directly connected to the marine industry and the management of vessels, or they are waste management and salvage firms with expertise and equipment that can support beneficial reuse or recycling. In some cases, these core task partners will possess existing capability to deal with the specific challenges associated with end-of-life vessel management. It is important to consider potential capacity for hauling vessels or supporting ADV removal

within this category of support. In other cases, stakeholder businesses in parallel industry sectors can provide critical services (waste haulers, solid waste material managers, demolition debris recyclers, auto recyclers). This is particularly true of managing the respective components of the “material bank” to process desirable hull contents and support the storage and transportation of the final product. In verifying the suitability of potential core task partners, it is important to consider cost-of-service, willingness to commit to network timelines and general environmental accountability when negotiating an associated work agreement. Establishing an explicit written working agreement to clarify specifics including material sizing, adherence to environmental and safety regulations, delivery requirements, pricing and timeline is recommended to assure clear mutual commitment. It is especially important to identify businesses with strong compliance records and the aptitude to try new material management tactics.

To convene recycling activities and maintain relationships with material end-users requires a central organization capable of timely and knowledgeable leadership. The lead organization provides a bridge between management of program objectives, budget and timelines with big-picture tasks related to partner identification, fundraising and marine industry engagement. In-house resources or staff that can support the organization of critical information, oversee interaction with funding sources and conduct general outreach to vessel sources can greatly enhance can greatly improve recycling efficiency. It is important that lead organizations have a familiarity with the local/regional marine industry and its members, so that the participation of marine businesses is facilitated through existing channels of engagement. Marine Trade Associations, industry groups, university extension services, non-profit organizations and law enforcement agencies all present unique characteristics that can position the partnership network to achieve success in vessel recycling.



PARTNERSHIP DEVELOPMENT



MATERIAL MANAGEMENT SUPPORT

STATE AGENCIES

Environmental agencies with existing regulatory control over vessel management and material recycling are important contributors to the development of a vessel recycling framework. In addition to navigating relevant regulatory requirements, these agencies can also help a partner network remain in tune with funding opportunities and relevant federal support.

State environmental agencies can serve as resources through all facets of partner network activity. It is important to determine who maintains legal authority over in-state vessel registration, the identification or verification of ADVs, the administration of relevant state boating funds and direct outreach to marine businesses and boat owners. In some cases, these agencies may already have direct control over vessels in need of beneficial reuse or recycling.

State environmental agencies also have the ability to support lead organizations in verifying the regulatory compliance history and general suitability of potential salvage or waste sector partners. Typically, state-approved recycling and transportation vendors are held to an environmental standard greater than businesses who may be willing to offer an attractive rate.

ENVIRONMENTAL ORGANIZATIONS

Non-profit organizations that focus on environmental efforts related to waste reduction and recreational boating present a variety of opportunities to generate funding and support vessel collection through boatyards and marinas. These groups often prioritize projects that aim to improve both end-of-life vessel management practices and the familiarity that boating stakeholders have regarding landfill alternatives. Coalitions and existing non-profit partnerships designed to support the protection of specific water bodies, regional ADV removal and 'clean regatta' certification are all strong footings for generating support for vessel recycling partners.

INDUSTRY ASSOCIATIONS

The identification and collection of vessels for beneficial reuse or recycling requires considerable input from marine businesses. As the gateway to the "legacy fleet", it is important to maintain a strong understanding of leading industry businesses in a particular state / region, and their capacity for aligning with a multi-sector partnership network. Marine Trade Associations (MTAs) represent an opportune lead position for the engagement and coordination of these businesses. MTAs often have ample experience organizing their members around shared goals, and provide an easy point of trusted communication for businesses who need clarification on specific aspects of the vessel recycling process. In addition to facilitating the commitment of specific businesses, an MTA will be able to provide greater context on the variables impacting cost at specific stages in the process. While not all MTAs have expendable staff and funding to be a lead organization, they should be included in logistic planning whenever feasible.

BOATING GROUPS

While MTAs serve as a direct point of access to marine businesses, boating groups and yacht clubs serve as a point of engagement with the broader boat owning community. While it is generally recommended that the collection of vessels be facilitated by marine businesses rather than directly from a member of the public, building awareness among vessel owners is important to cementing support for the continuation of beneficial reuse or recycling goals. Many owners do not think beyond the time horizon that reflects an end-of-life vessel, but want to understand how they can take future steps to ensure their vessel is managed responsibly. Sharing progress and growing interest in an alternative to landfill disposal is critical to the visibility of a partnership network, and will also support the potential for greater legislative commitment in the future.

