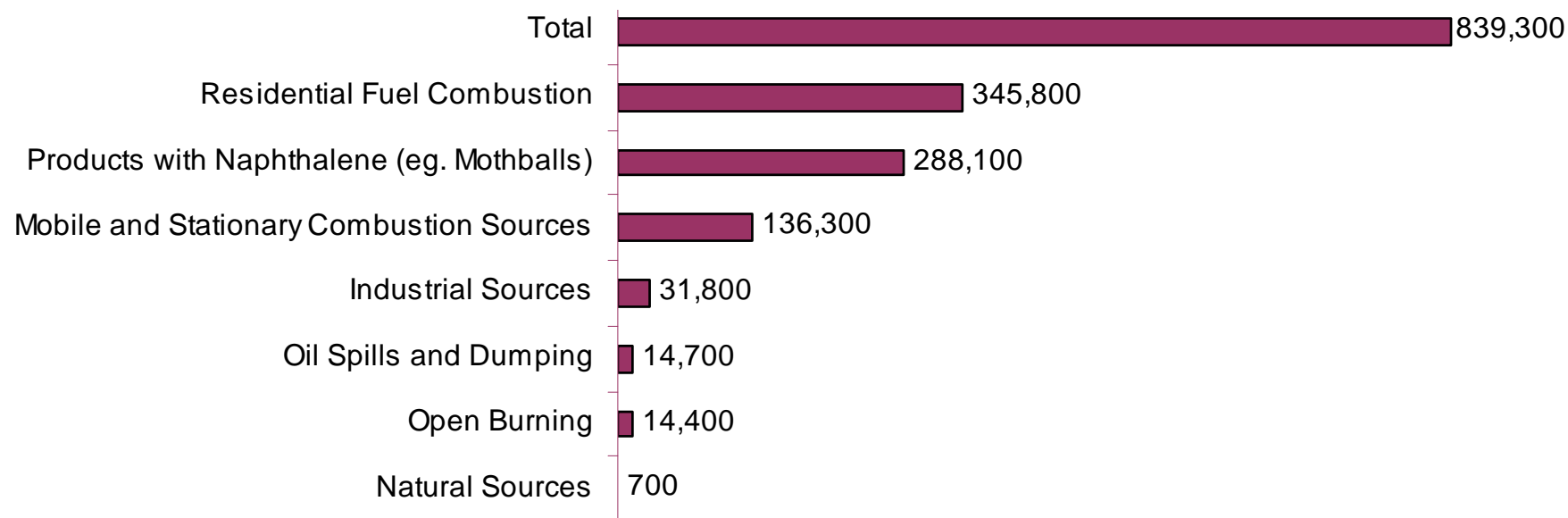
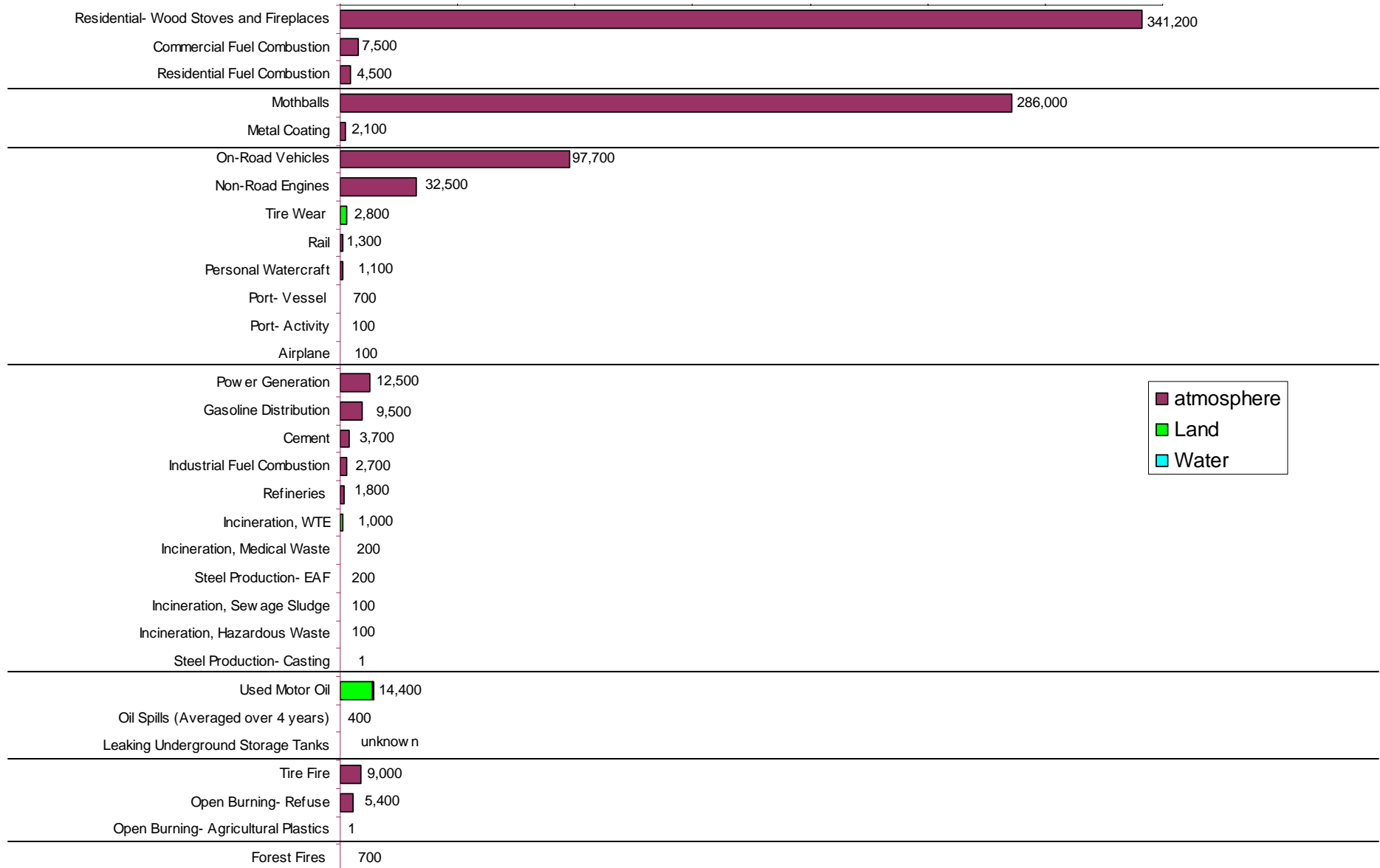


Summary: Estimated PAH Releases to all Media

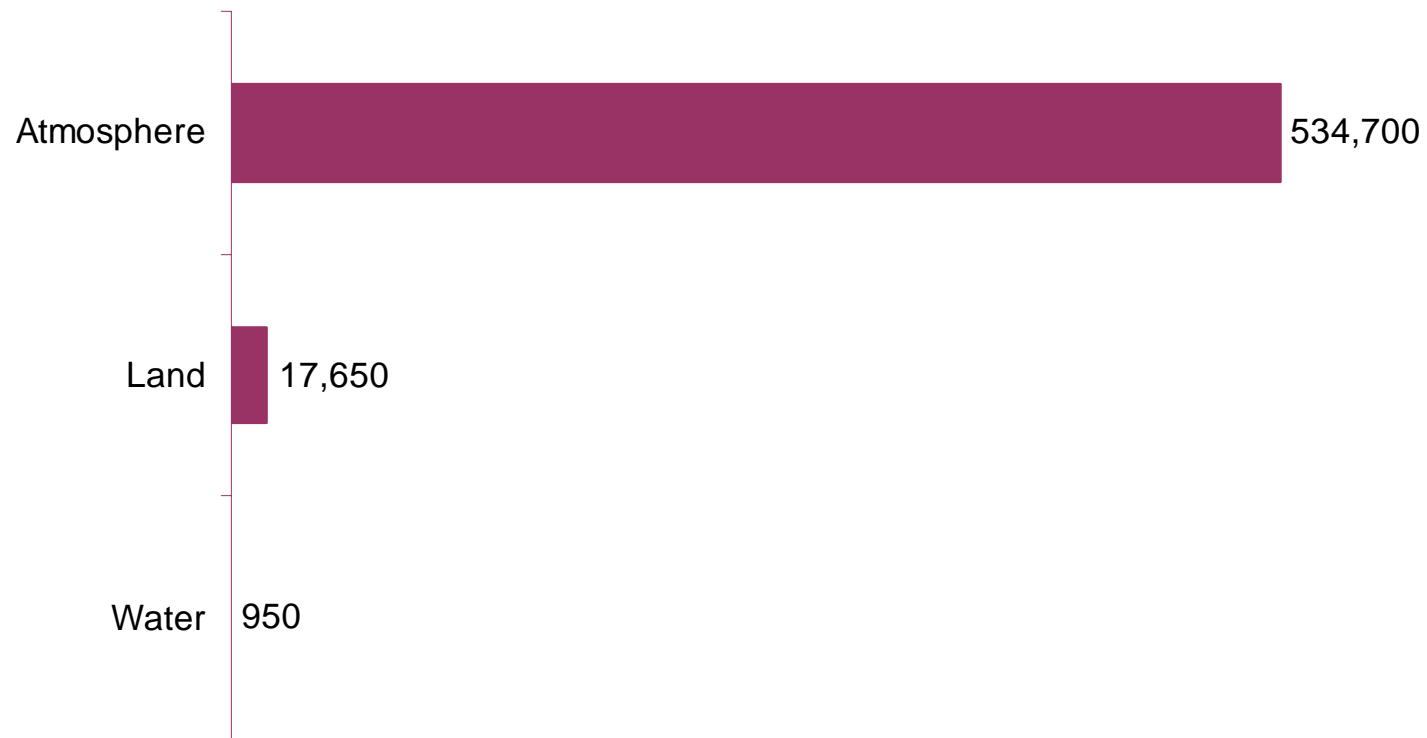


kg/year in the watershed

Estimate PAH Emissions from Each Sector (kg/yr)



Estimated PAH Releases to Each Media



kg/year in the watershed

Not including mothballs

Preliminary Pollution Prevention Recommendations

Vehicular Activity

Non-road Engine Activity

Residential Wood Combustion

Oil Spills

Improper Disposal of Used Motor Oil

Pollution Prevention, cont.

Vehicular Emissions

➤ Reduced Fuel Combustion.

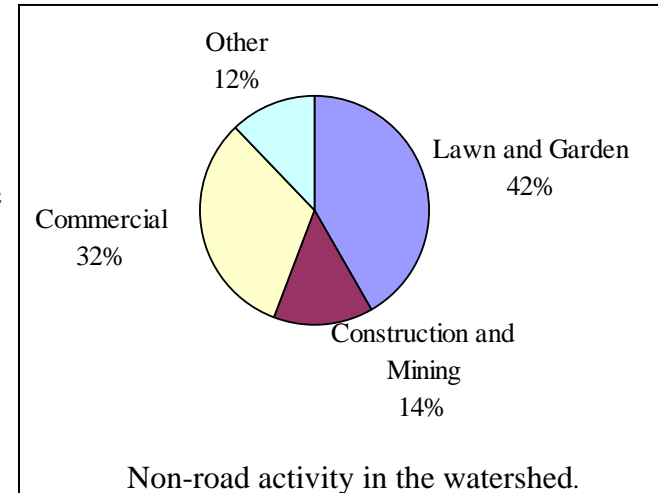
- Continue to adopt stringent fuel-efficiency standards.
- Implement policy that promotes the penetration of alternative fueled vehicles.
 - eg. free parking for hybrids, incentives for taxis to convert to hybrids.
- Anti-Idling education.
 - Increase compliance through monitoring and outreach.
 - Equip refrigerator trucks with equipment that allows coolers to work while truck is off.
- Create a tax structure that discourages unnecessary driving, while improving public transportation.
 - eg. tax breaks that favor use of public transportation, or congestion pricing.
- Vehicle maintenance and use measures
- Improve vehicle design.
 - Reduce drag through more aerodynamic designs.
 - Manufacture vehicles out of lightweight durable materials.
- Urban Form.
 - Design communities that foster public transportation, bicycling and walking.

Pollution Prevention, cont.

Non-road Emissions

➤ Lawn and garden equipment

- Implement a change-out program that encourages the exchange of older engine technologies for new.
- Encourage low-maintenance landscape design.
 - Target suburban communities
- Outreach and education
 - Educate community on importance of good maintenance practices and efficient equipment.
 - This could be coupled with information on proper disposal of used motor oil.



➤ Construction and commercial equipment

- Emission control retrofit program.
- Idle reduction strategies.

➤ Update emission factors

Pollution Prevention, cont.

Residential Wood Combustion

➤ Pollution Control

- Increase emission standards for wood stoves to reflect MACT technology. (*WA state ~half of EPA's allowable emissions from woodstoves.*)
- Establish a change-out program.
- Educate the community on good maintenance practices.
 - This information should be distributed by the stove and wood retailer.

➤ Reduce Fuel Consumption

- Educate retailers and consumers on how to properly size heating unit.
- Educate designers and local government officials on sustainable design and passive solar design.
- Provide incentives for the use of renewable energy.
- Adopt energy-efficiency measures as code.

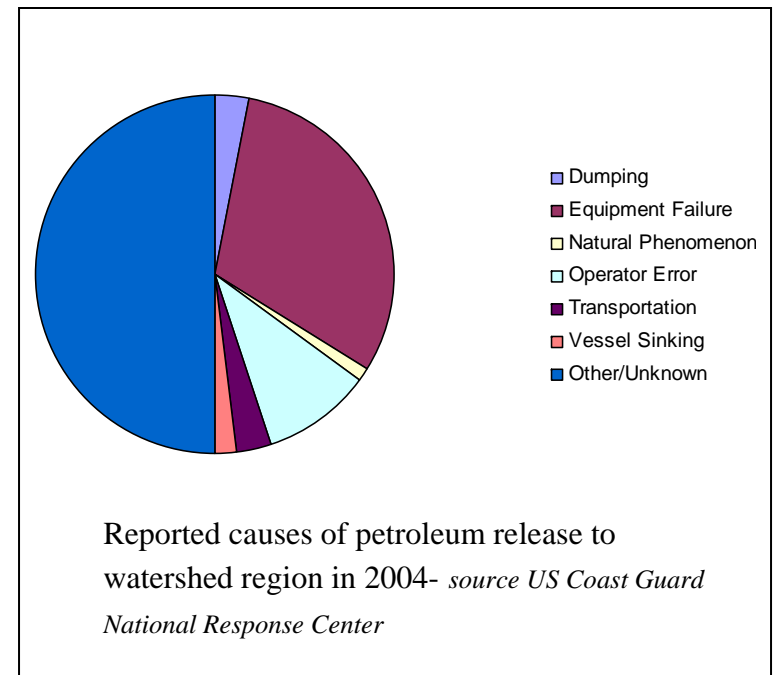
➤ Substitution.

- Provide incentives for residences that substitute wood burning devices for heating devices that combust cleaner burning fuel.

Pollution Prevention

Petroleum Spills

- Maintenance
 - Establish stricter maintenance program for petroleum storage facilities.
 - Require regular audits of equipment.
- Education
 - Organize in-service for employees with a focus on preventative maintenance
- Spill recording and reporting
 - Documentation of cause of leak/spill



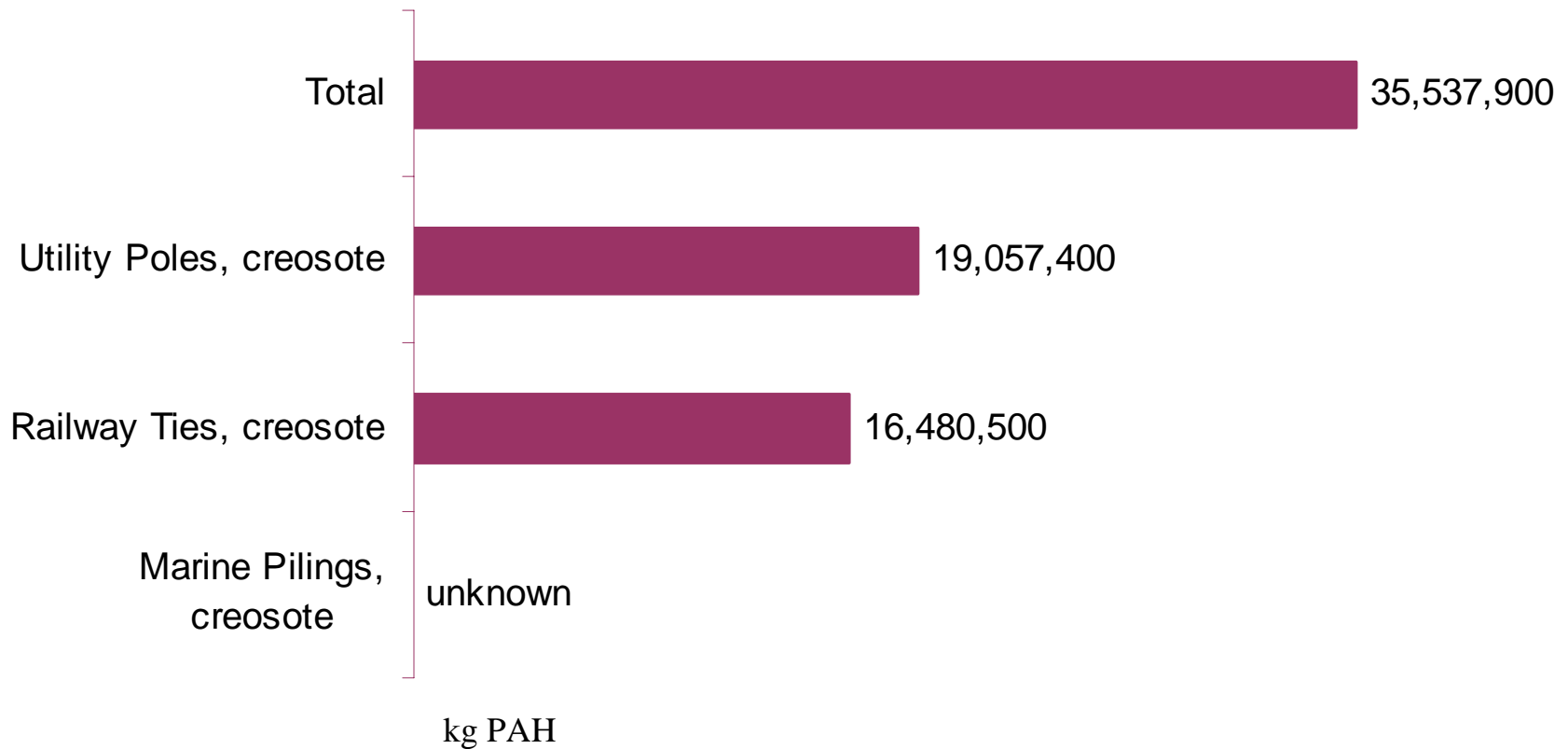
Pollution Prevention, cont.

Used Motor Oil Disposal

- Outreach and education
 - Inform residents of local oil disposal facilities (such as service stations and retail stores selling oil) and municipal collection days.
 - Distribute information on the hazards of improperly disposing of motor oil.
 - Distribute curriculum to schools that address the importance of recycling motor oil.
 - Target users of non-road vehicle equipment.
- Increase collection opportunities.
 - Establish regular pick-up of used motor oil.
 - Increase the number of retail stores collecting used motor oil.
 - Require marinas to collect used motor oil.
- Increase the end-use market.
 - Promote the purchasing of re-refined oil.
 - Educate consumers on the quality and availability of re-refined oil.
- Change the properties of the oil
 - Regulate the aromatic content of oil.
 - Require a minimum interval between oil change (i.e. indicated by the manufacturer).
- Data gaps.
 - More information is needed on the actual recycling rates and proper disposal rates. This may require a survey of “Mom and Pop” shops, do-it-yourselfers, and the boating community.

Additional Sectors

Estimated Stocks of PAHs in Creosote Materials



Parking Lot Sealants

Background:

- Sealants used to protect asphalt surfaces (i.e. parking lots and driveways).
- Two types of sealant: Asphalt based and Coal-tar based. (*coal-tar sealants predominately used east of the Rockies*)
- **Concern with coal-tar and asphalt based sealants:**
 - Contain PAHs
 - Abrade from surface over time and are transported via runoff.