

# Retrofit Challenges



# NW Ports Introduction to Retrofit Technology



**Level 1**  
**DOC**  
Replace existing  
muffler



**Level 2**  
**Partial Flow Filter**  
Low operating  
temperature  
Requires Exhaust  
Modification  
No Maintenance  
Required  
(Fit – and – Forget???)



2005

2008

2009

2010

**Level 3 Trial Projects**  
**Diesel Particulate Filter**  
Higher operating  
temperature  
Requires exhaust  
modification  
Requires Annual Cleaning



**Level 3 – Diesel Particulate Filter**  
Equipment Verification  
Equipment Pre-screening  
Duty Cycle Considerations  
Proper Equipment Placement  
Routine Cleaning  
Proactive Equipment Maintenance



# Building Collaboration



- ✓ Create Advocates
- ✓ Understand Stakeholders
- ✓ Learn to Communicate
- ✓ Provide Support

## Four critical steps for DPF success

1. Pre-retrofit evaluation of equipment
2. Ongoing training of operators and mechanics
3. Regular equipment maintenance
4. Support for troubleshooting, filter cleaning, & maintenance



## Pre-retrofit evaluation of equipment

1. Equipment survey
2. Temperature profiling during typical operation
3. Initial opacity testing
4. Follow-up opacity testing after **any** engine repairs



## Ongoing training of operators and mechanics

### 1. Pre-installation training

(low-ash oil, ULSD, no fuel additives, how it works)

### 2. Post-installation training

### 3. Refresher training

(checking monitor daily,  
cleaning intervals,  
opacity testing)



## Regular equipment maintenance

1. Annual opacity tests
2. Proactive maintenance



## Support for troubleshooting

1. Respond to issues promptly! Avoid rumors!
  - A. Terminals need to notify contractors as soon as an issue is identified
  - B. Funding agencies and contractors need to follow up
2. Don't point fingers. Fix the problem.





## Support for filter cleaning & maintenance

1. Make sure the right procedures are in place
  - A. Cleaning contractor should:
    - 1) Provide pre-cleaning inspections
    - 2) Know who to notify if there is a problem
  - B. Contractors and manufacturers need be able to respond promptly to cracked cores and other issues
2. Encourage good maintenance
  - A. Funding agencies should perform audits
  - B. Contractors should encourage and support periodic training



# Thank You

