



San Pedro Bay Ports Clean Air Action Plan



Technology Advancement Program

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Purpose of the TAP

Mission Statement:

- to accelerate the verification or commercial availability of new, clean technologies, through evaluation and demonstration, to move towards an emissions free port

• **Objectives:**

- Facilitate the development and implementation of new and emerging technologies to reduce air emissions
 - Streamline the process for reaching consensus with the agencies on the emission reductions achieved by various technologies
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TAP Advisory Committee

Combining expertise and resources...

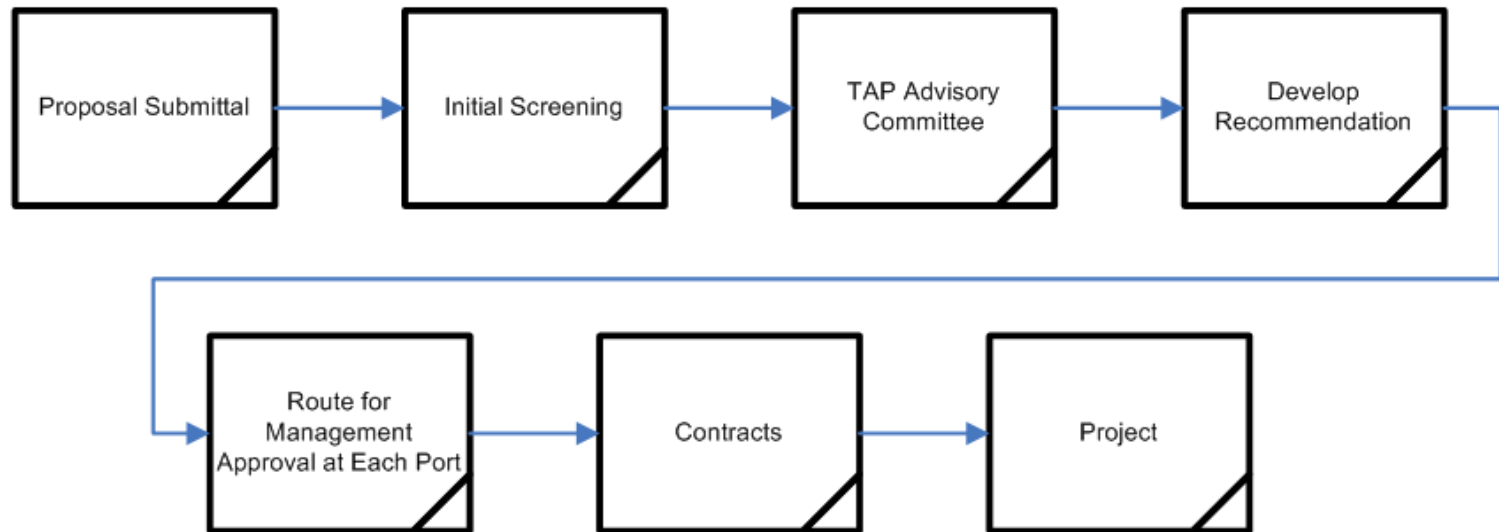
- **Port of Long Beach**
- **Port of Los Angeles**
- **Advisory Committee**
 - EPA, CARB, AQMD
 - Serve in an advisory capacity to the ports for screening, evaluating and recommending projects
 - Streamline the process for reaching consensus on the performance of the technology




New / Emerging Technology Demonstrations Types of Projects

- **Port Generated projects**
 - **Solicited proposals**
 - **Unsolicited proposals**
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Unsolicited Proposal Process



TAP Project Requirements Screening/Evaluation

- **Technology Application**
 - **CARB Verification**
 - **Matching Funds**
 - **Emission Reductions**
 - DPM, NO_x, SO_x
 - GHGs, ultrafines
 - **Ability to meet the needs of the port industry**
 - **Cost**
 - **Feasibility - development status; qualifications**
 - **Statement of Work – technical approach; schedule**
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Technology Demonstration Projects

LNG Yard Hostler

- **First application of LNG in cargo handling equipment**
- **Demonstrated in both POLB and POLA terminals**
- **Performance Evaluation Study**
- **Business Case Assessment**
- **Project partners: POLB, USEPA**
- **POLB Contribution: \$350K**
- **Results:**
 - Good operational performance
 - DPM reductions
 - NOx emissions increased compared to diesel



Hybrid Yard Hostler

- **Hybrid yard hostler project developed by POLB**
- **Develop and demonstrate performance of hybrid technology in yard hostler application**
- **Project partners: LBCT, POLB, POLA, USEPA**
- **Combined ports' contribution: \$600K**
- **Anticipated benefits:**
 - 93% NOx and PM emissions reductions



Capacity PHETT™

- Evaluation of the performance and emissions of the Capacity Pluggable Hybrid Electric Terminal Tractor (PHETT)
- Project Partners: Capacity, POLA, POLB
- Anticipated benefits:
 - 56% PM reduction
 - 44% NOx reduction



Balqon Electric Terminal Tractor and On-Road Truck

- Development of a prototype low-speed full-electric on-road truck and terminal yard tractor
- Project Partners: Balqon, POLA, SCAQMD
- Potential future option for short-haul drayage/intermodal
- Anticipated benefits:
 - Nearly 100% emission reductions



Vision Industries ZEV Truck

- Design and demonstration of both an on-road and off-road zero emission hydrogen fuel cell/plug in hybrid electric powered HDV
- Combined ports' contribution: \$500K (pending)
- Anticipated benefits:
 - Zero tailpipe emissions



Vycon REGEN System

- Flywheel energy storage system
- Installed on Rubber Tired Gantry Cranes (RTGs)
- CARB verification achieved
- Project partners: Vycon, POLB, POLA, AQMD
- Combined ports' contribution: \$23K
- Benefits:
 - Verified as Level 1 technology
 - 25% PM reductions
 - 30% NOx reductions
 - 30% CO2 reductions
 - 35% fuel savings



LBCT Eco Crane

- **Replace 680 brake horse power with a hybrid system**
- **Project partners: LBCT, POLB, POLA**
- **Combined ports' contribution: \$350k**
- **Anticipated benefits:**
 - 85 – 90% total emissions reductions



RYPOS HDPF/C System

- **Active diesel exhaust filter system that uses controlled electric heating for reliable regeneration**
- **Combined ports' contribution: \$129K for emissions testing**
- **Anticipated benefits:**
 - 93% PM reduction
 - 15% NOx reduction



eRTG

- **Electrification of rubber tired gantry cranes, electrification designed by Paceco**
- **West Basin Container Terminal – 1 crane**
- **POLA contributed \$1.2 million.**





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Learn more about the Clean Air Action Plan - www.cleanairactionplan.org

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