

Selecting Climate-Friendly Air Conditioning Systems

Stephen Andersen (EPA)

Keep MACs in Perspective of Vehicle Fuel Efficiency

- New power sources
- Efficient engine and powertrain
- Low running resistance and weight
- Efficient auxiliary systems
 - heating and air conditioning, power steering, alternator, water pump, fans

Balanced Investment in Reduced Cooling Demand

- Optimize glazing, infiltration, insulation, and colors
- Utilize air velocity, location, and apparent comfort
- Balance cost-effectiveness of MAC options against investment in other vehicle systems

Selecting Climate-Friendly Refrigerants

- Life-Cycle Climate Performance (LCCP) is the measure of direct (refrigerant) and indirect (combustion emissions) climate impact
- LCCP and cost comparisons based on optimized, safe and reliable systems *relative to improved HFC systems*

Satisfy Consumer and Future Market Demands

- Customer Acceptance (quiet comfort)
- Safety and Reliability
- Safe Service and Disposal
- Suitable for Next-Generation Vehicles (fuel cell, hybrid, electric)

Communicate Technical Feasibility and Environmental Performance

- Consensus environmental performance criteria
- Technical optimism

Cost-Effectiveness of Eliminating HFC Depends on Baseline Assumption

- \$173 investment to eliminate HFCs costs \$159 per MTCE relative to current vehicles without recycle (3.2 kg 10-year emission baseline)
- \$173 investment to eliminate HFCs costs \$2133 per MTCE for reducing HFC emissions relative to improved vehicles with recycle (0.4 kg 10-year emission baseline)