Policy implications of short-lived climate warming pollutants

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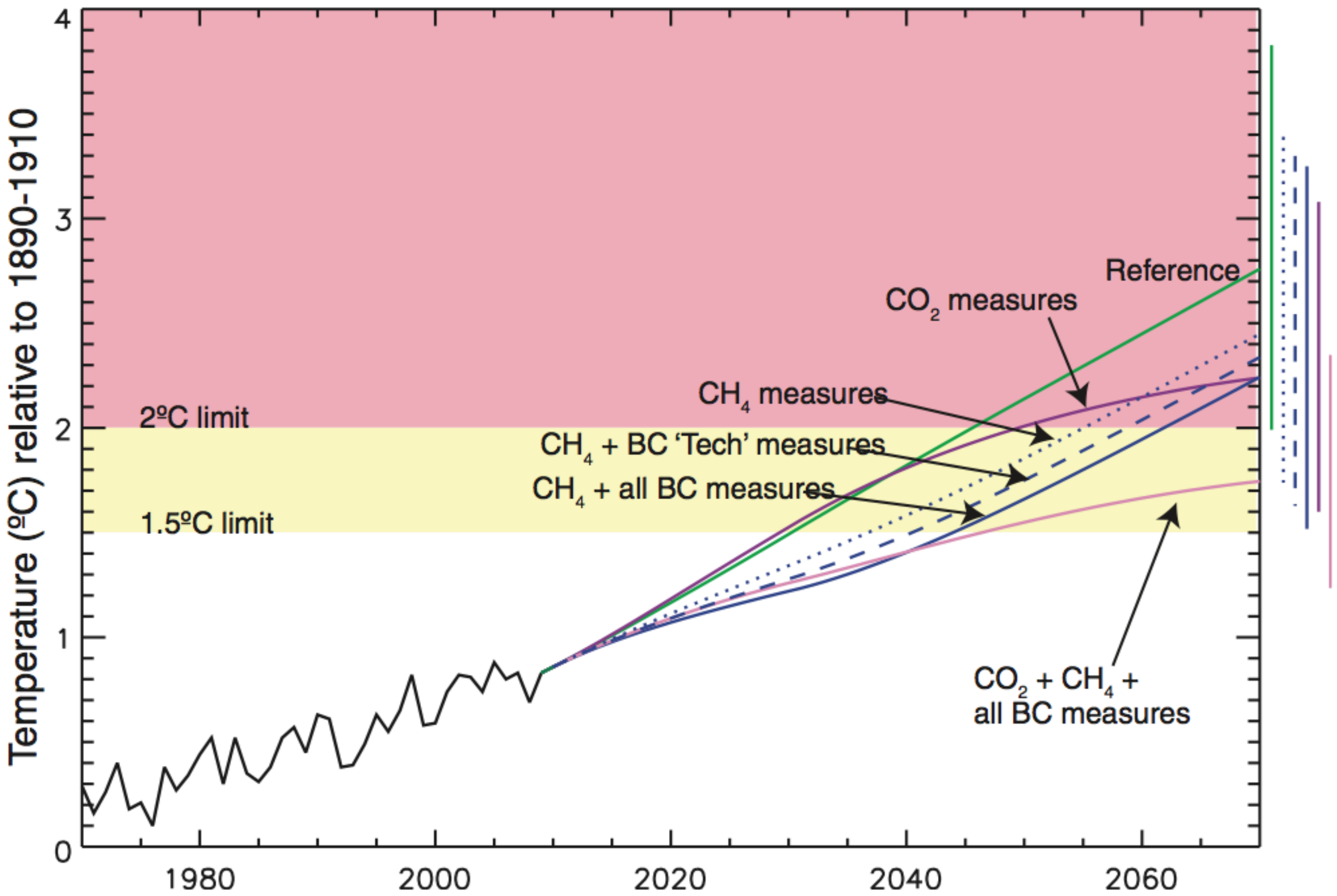
Value of conventional pollutant controls to achieving climate goals



Shindell, D., Kuylenstierna, J. C. I., Vignati, E., van Dingenen, R., Amann, M., Klimont, Z., Anenberg, S. C., et al. (2012). Simultaneously Mitigating Near-Term Climate Change and Improving Human Health and Food Security. *Science*, *335*(6065), 183–189. doi:10.1126/science.1210026

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California actions on black carbon

- Diesel Risk Reduction Plan
- LEV III recognition of black carbon climate warming
- Comprehensive statewide black carbon emissions inventory
- State-of-the-art black carbon vehicle emissions testing in El Monte
- Highly targeted and effective research program

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Key SLCP features of LEV III

- Significant precedent set by 1 mg/mi PM standard for passenger cars
- Lengthy Appendix acknowledging the climate warming impacts of black carbon
- Important extension of credits for low GWP refrigerant and low leak systems

California leadership translates internationally

2012 G-8 declaration, point 14

“Recognizing the impact of short-lived climate pollutants on near-term climate change, agricultural productivity, and human health, we support, as a means of promoting increased ambition and complementary to other CO2 and GHG emission reduction efforts, comprehensive actions to reduce these pollutants, which, according to UNEP and others, account for over thirty percent of near-term global warming as well as 2 million premature deaths a year…”

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UNEP’s List of 17 Promising Measures

Methane measures

1. Recovery of coal mine gas
2. Production of crude oil and natural gas
3. Gas leakages at pipelines and distribution nets
4. Waste recycling
5. Wastewater treatment
6. Farm-scale anaerobic digestion
7. Aeration of rice paddies

BC – technical

1. Modern coke ovens
2. Modern brick kilns
3. Diesel particle filters
4. Briquettes instead of coal for heating
5. Improved biomass cook stoves
6. Pellets stoves and boilers

BC - Non-technical

1. Ban high-emitting vehicles
2. Ban open burning of agricultural waste
3. Eliminate biomass cook stoves

UNEP's "High Five"

- Fast action on diesel emissions [BC]
- Upgrading old inefficient brick kilns [BC]
- Accelerating reduction of methane from landfills [CH_4]
- Speeding cuts of methane and black carbon emissions from oil and gas industry [CH_4+BC]
- Accelerating alternatives to HFCs [HFCs]

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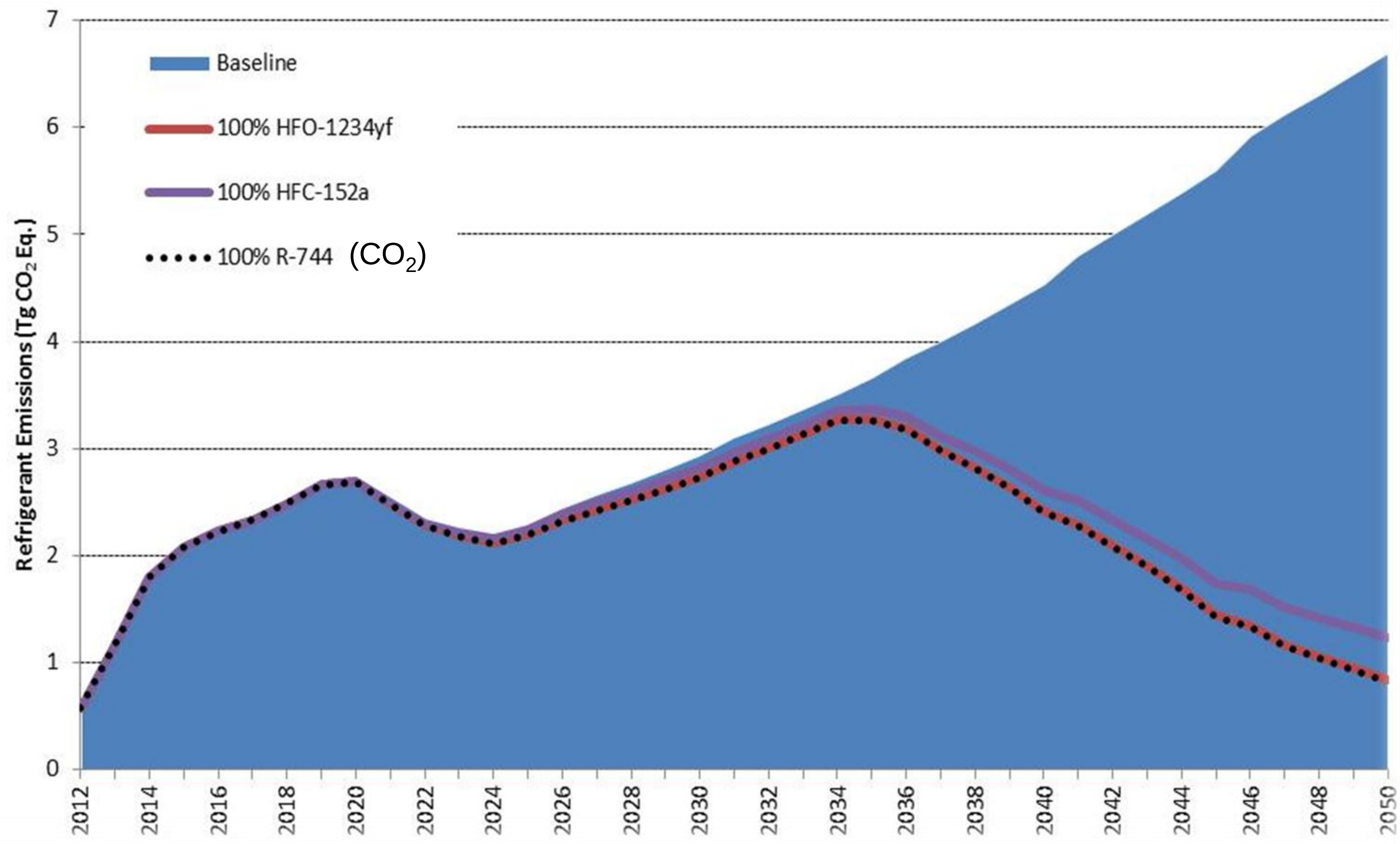
Challenges with HFC controls in EU mobile sector

- EU Commission has delayed enforcement of MAC rule by two years to Dec 2012
- EU courts have rejected patent claim of Honeywell and Dupont over HFO-1234yf
- Some European citizens and environmental groups remain concerned about flammability and toxicity, and they favor CO_2
- Automakers generally remain committed to using HFO-1234yf

Lessons for US MAC Policy

- Crediting system is the better approach in light of uncertainties in global refrigerant supply
- Alternatives to HFO-1234yf may be increasingly important
  - US EPA has not issued “unique fitting” rule that permits CO_2 systems despite SNAP approval and their lower lifecycle cost

Global mitigation potential from alternative MAC systems



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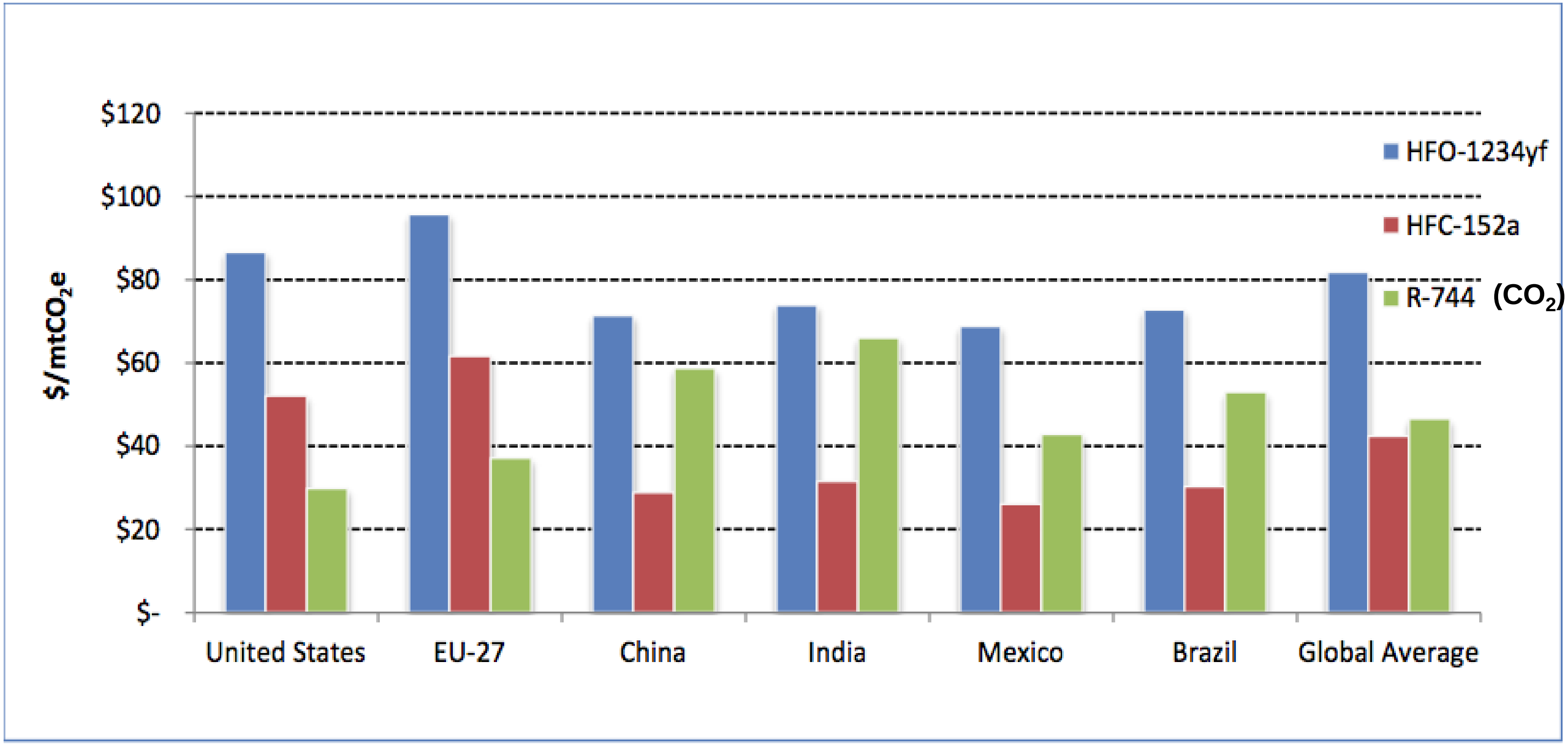
Projected lifecycle costs of alternative MAC systems in 2025



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Review authority under AB 32 to address SLCPs and take appropriate actions

- Report and verify statewide emissions, and account for:
  - The full net climate effect SLCPs
  - Differences in impact by region.
  - Differences in impact by source.
  - Both near-term and long-term climate impacts, including multiple time horizons for CO_2-equivalent metrics.
- Identify statewide greenhouse gas emissions targets for 2020 that include SLCPs and maintain existing stringency on GHGs
- Update plan for achieving maximum technology feasible and cost-effective reductions and take account of SLCP measures
- Keep SLCPs out of market-based mechanisms

Conclusions

1. Stay committed to CO_2, and treat SLCPs as complementary
2. Adopt explicit goals to limit the “rate of climate change” and “near-term climate impacts”
3. Include SLCPs in the statewide GHG inventory and AB32 planning process
4. Review existing regulations that reduce SLCPs and quantify their climate co-benefits
5. Undertake an assessment of uncontrolled statewide sources of SLCPs
6. Identify maximum avoidable cost-effective emission reduction measures for uncontrolled sources
7. Prioritize or speed up strategies that can be rapidly implemented
   - Consider more rapid phase-in of 1 mg/mi LEV III PM standard
8. Marine black carbon demo at major port