

Endangerment and Benefits In the ANPR

**Mobile Sources Technical
Review Subcommittee -
Clean Air Act Advisory Committee
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Endangerment Issue (Section V of Preamble)



- According to *Mass v. EPA* decision, EPA must find:
 - there is endangerment, or
 - there is no endangerment, or
 - science is too uncertain to make a reasoned judgment
- Language under Sec. 202 of the CAA:
 - The Administrator shall by regulation prescribe...standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.
- With the ANPR, EPA did not make an endangerment finding, but rather seeks comments on implications of making an endangerment finding

Endangerment Issue



- **“Air pollution” that may cause endangerment needs to be defined**
 - In the ANPR, “EPA is considering defining the air pollution...as the elevated combined current and projected atmospheric concentration of the six GHGs.”
 - EPA is seeking comment on how other gases and aerosols with warming effects should be treated (e.g., CFCs, tropospheric O₃, black carbon).
- **Risks and impacts of climate change (driven by elevated GHG concentrations) are described**
 - Current and projected (out ~100 years)
 - Primarily within U.S. but international impacts also described
 - All climate-sensitive sectors
 - Human health & air quality
 - Agriculture & forestry
 - Water resources
 - Coastal areas
 - Energy & infrastructure
 - Ecosystems & wildlife

Endangerment Issue



- Administrator must exercise judgment on whether the air pollution may be reasonably anticipated to endanger public health, welfare, or both.
 - Administrator can consider future possibilities, uncertainties, and extrapolate from limited data
 - Precautionary nature of statutory language means Administrator does not have to wait until there is proof of harm
 - ANPR raises issue that human health effects occur “indirectly” via climate change rather than directly through inhalation and asks how this should be treated in public health vs. welfare finding
- If Administrator finds the air pollution is causing endangerment, then he must determine if “air pollutants” from the source category in question “cause or contribute to” the air pollution
 - ANPR illustrates for the transportation sector two general approaches:
 - Define the air pollutants individually on a gas-by-gas basis
 - Define the air pollutants collectively (e.g., all 6 GHGs, or all 4 from transportation)

Endangerment Issue



- In addition to ANPR endangerment discussion, EPA released supporting Technical Support Document for Endangerment Analysis
 - Is the basis of the scientific discussion in the ANPR
 - Relies heavily on IPCC Fourth Assessment and available CCSP reports
 - Underwent peer review by federal scientific experts (all of whom were IPCC and/or CCSP authors)
 - Does not contain policy/legal endangerment discussion, nor does it convey any judgment regarding endangerment
 - Provides GHG emission data from all sectors
 - Shows observed and projected climate change for the US and globally
 - Describes evidence for current and projected effects in all climate-sensitive systems and sectors
- Technical Resource:
Full title: *Draft Technical Support Document - Endangerment Analysis for Greenhouse Gas Emissions under the Clean Air Act* (www.regulations.gov; document ID: [EPA-HQ-OAR-2008-0318-0082](http://www.regulations.gov/document/EPA-HQ-OAR-2008-0318-0082))

Benefits of Reducing GHG Emissions

(Section III.G)



- In the event that EPA pursues GHG emission reduction policies, cost and benefits of policy options must be considered
- Economic evaluation of GHG mitigation options is particularly challenging
 - Uncertainties are magnified by the long-term, global nature of problem
 - Costs and benefits need to be estimated over multiple generations
 - Timing and magnitude of climate change impacts are uncertain
 - Pace and form of population & economic growth and future technological innovation are uncertain
- Global benefits should be considered when evaluating GHG reduction policies
 - To account for the full costs to society and to efficiently address climate change (in economic terms)
 - International effects of climate change may be of value domestically
 - National security
 - Economic and social disruption
 - Concern for species and ecosystems
 - Ecosystem disruption
 - Tourism

Benefits of Reducing GHG Emissions



- Over the last year, EPA developed ranges of global and U.S. marginal benefits estimates
 - Based on peer reviewed estimates and models that have been published in the peer reviewed literature
 - The ranges reflect uncertainties in socioeconomic assumptions, climate responsiveness, modeling, and the choice of discount rate
- What value should be used?
 - Given uncertainties, it is appropriate to consider ranges
 - Given accelerating climate change and greater sensitivity to emissions changes over time, it is appropriate to consider marginal benefits estimates that are rising over time.
 - Current estimates are likely underestimated according to the IPCC.
 - Capacity to do these assessments will improve over time.
- Technical Resource:
EPA's *Technical Support Document on the Benefits of Reducing GHG Emissions* (www.regulations.gov; search on "Technical Support Document – Benefits")

Benefits of Reducing GHG Emissions



- What value should be used?
 - Given uncertainties, it is appropriate to consider ranges
 - Given accelerating climate change and greater sensitivity to emissions changes over time, it is appropriate to consider marginal benefits estimates that are rising over time.
- Given large unquantified GHG benefit uncertainties and potential threshold impacts, it is difficult to apply economic efficiency or net benefit criteria
 - Estimates are likely to be underestimated, since significant potential impacts have not yet been monetized (e.g. risks of extreme weather or catastrophic events)
 - A risk management framework would be appropriate in this context
 - For non-marginal emissions changes, more structured modeling is needed than what is currently used for marginal benefits calculations – important biophysical and economic feedbacks
 - Even small reductions in global GHG emissions are expected to reduce climate change risks, including catastrophic risks
- Technical Resource:
EPA's Technical Support Document on the Benefits of Reducing GHG Emissions (www.regulations.gov; search on “Technical Support Document – Benefits”)