



Update on the Governor's Greenhouse Gas Reduction Targets and Related Activities

March 23, 2006



Comprehensive, Multi-Agency Effort

- Climate Action Team identified 44 recommended strategies
 - 11 already underway
 - 33 to be implemented
- Significant, ongoing ARB role



Important Role for ARB

- Strategy development and implementation
 - Motor vehicle GHG reduction
 - 10 additional ARB strategies identified in Climate Action Team report
- Economic analysis
- Scientific research



Motor Vehicle GHG Regulations

- Took effect January 1, 2006
- Litigation underway
- USEPA waiver requested
- Climate Action Team report recommends more stringent standards for 2017 and beyond



Vehicle GHG Reductions

	2020 Reduction (MMT)	2030 Reduction (MMT)
Current regulation	30	51
Possible followup* (2017 and beyond)	4	27
Combined effect	34 (23% of 2020 target)	78

*Based on assumed 50% reduction from 2002 baseline



Potential Approaches for Additional Vehicle Reductions

- Significant HEV penetration after 2016
- Increased use of alternative fuels
 - Biofuels (biodiesel, ethanol)
 - Hydrogen
 - Electricity (plug HEVs)



Scientific Evidence Continues to Mount

- Temperature trends in lower atmosphere
- Further evidence of glacial melting
- Human activities contributing to oceanic warming



Temperature Trends in Lower Atmosphere

- Previous research showed discrepancies between warming near the surface and higher in the atmosphere
- Errors have been identified and corrected in satellite data and other observations
- Recent evidence has increased confidence in our understanding of observed changes and their causes



Further Evidence of Glacial Melting



Glacier Bay National Park, 1941



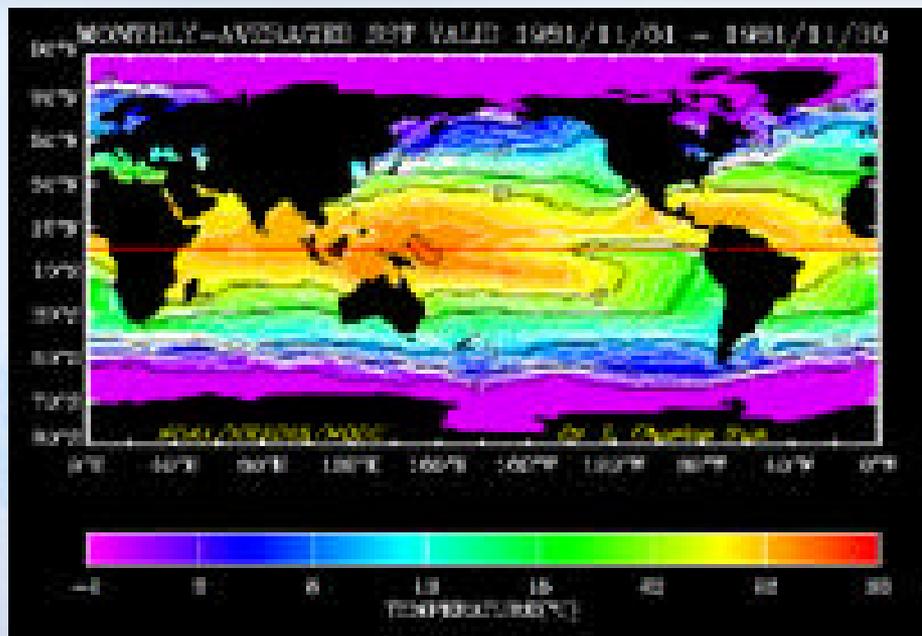
Glacier Bay National Park, 2004

Two recent studies with similar findings:

- Satellite surveys show that Antarctica is losing ice faster than it is replenished
- Subtle changes in Earth's gravitational field also indicate loss of ice



Human Activities Contributing to Oceanic Warming



Study considers vertical warming of the oceans and the role of natural events (e.g. solar variability, volcanic activity)

- Warming cannot be explained by natural climate variability
- Concludes that oceanic warming is human-induced

Barnett, et.al., Science, V. 309, July 8, 2005



Strategy Development (ARB Strategies)

	2010 (MMT)	2020 (MMT)
Vehicle climate change standards	1	30 <input checked="" type="checkbox"/>
Other new light duty vehicle technology improvements	0	4
Diesel anti-idling	1	1.2 <input checked="" type="checkbox"/>
HFC reduction	2.7	8.5
Transport refrigeration, off-road electrification, port electrification	<1	<1
Manure management	0	1



Strategy Development (ARB Strategies)

	2010 (MMT)	2020 (MMT)
Semiconductor industry targets (PFC)	2	2
Alternative fuels: Biodiesel blends	<1	<1
Alternative fuels: Ethanol	<1	3.2
Heavy duty vehicle emission reduction	0	3
Reduced venting and leaks in oil and gas systems	1	1
Hydrogen highway	Included	Included



Economic Analysis

- Preliminary analysis concludes that strategies will benefit CA economy
 - Increased jobs
 - Increased personal income
- Refined analysis to be completed later
 - Updated cost and savings estimates
 - Analysis of individual strategies
- ARB will support analysis of market based alternatives



ARB Research Priorities

- Improve our ability to characterize impact of climate change on California
 - Biogenic emissions
 - Meteorology
 - Air quality



ARB Research Priorities

- Improved tools to assess the economic impacts of GHG reduction strategies
 - Life cycle analyses
 - Market based approaches
- Studies to support identification and implementation of specific strategies



Governor's Proposed Budget (ARB Climate Change Activities)

- 15.5 positions
 - Strategy development and implementation
 - Economic analysis
- \$3.25 million (one-time) in contract funding