Regional Air Quality Workshop
Day 2
Overview of VOC Candidate Control Measures

Regional Air Quality Workshop
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Presented By:
Edward Sabo
MACTEC Federal Programs
ejsabo@mactec.com

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MACTEC Project Overview

- **Candidate Control Measures**
  - Identify potential emission reduction measures
  - Conduct technical and cost analysis
  - Develop control factor files for modeling

- **BART Regional Engineering Analysis**
  - Prioritize non-EGU source categories
  - Identify potential emission reduction measures
  - Recommend approach for BART analysis
  - Implement preliminary BART approach for specific sources

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Today's Presentations

- Focus on Candidate Control Measures for VOC
- Phase I Candidate Control Measures (White Papers)
  - Gasoline Dispensing Facilities
  - Portable Fuel Containers
  - Industrial Surface Coating
  - Industrial Surface Cleaning
  - Consumer and Commercial Solvents
  - Architectural and Industrial Maintenance (AIM) Coatings
  - Automobile Refinishing
  - Asphalt Paving Applications

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Basis for Selection of Candidate Measures (White Papers)

- Three Factors Considered:
  - Emissions Contribution
  - Source Apportionment
  - Potential for Additional Reductions in 2007/08/09 timeframe
- States ranked relative importance of various categories to develop initial list of White Papers
- Initial focus on SO2, NOx, and VOC
  - Future may address primary PM, EC/OC, Ammonia

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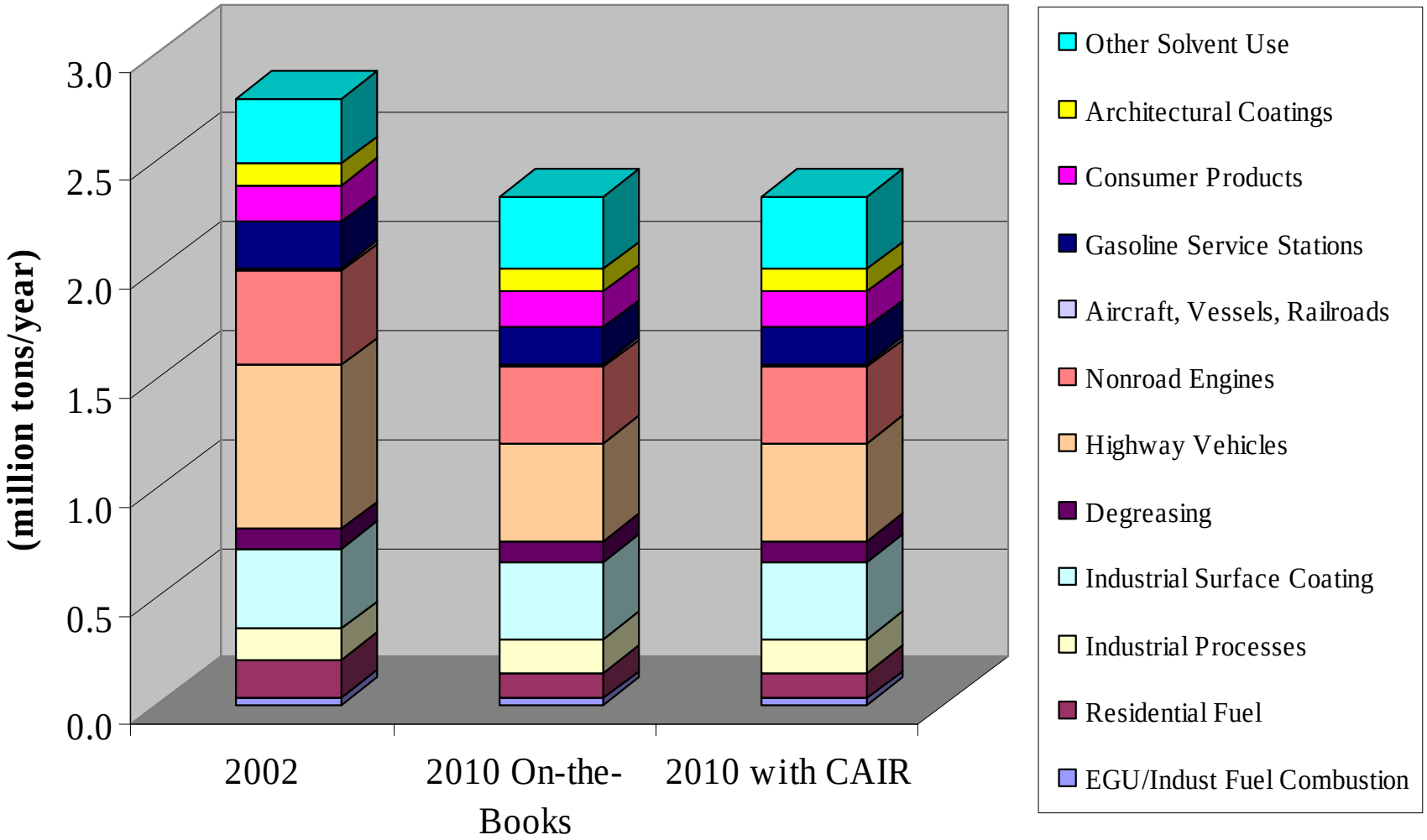
VOC Emissions By Sector for LADCO Region (includes on-the-books controls as of July 1, 2004)



“On-the-Books” Federal Control Measures with Post-2002 VOC Emission Reductions

- Federal Control Programs in NONROAD
- Evaporative Large Spark Ignitions and Recreational Vehicle Standards
- On-board Refueling Vapor Recovery
- Federal Woodstove Standards
- Post-2002 MACT surface coating standards

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VOC Candidate Control Measures
Gasoline Distribution Facilities

- *Measure SOLV7A – Adopt CARB EVR Stage I requirements*
  - Increase required control efficiency of Stage I vapor recovery systems from 90 to 98 % in counties with existing Stage I requirements
  - Optionally, the control measures could be extended to counties that currently do not have Stage I requirements

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VOC Candidate Control Measures
Gasoline Distribution Facilities

- *Measure SOLV7B – Adopt CARB EVR Stage II requirements*
  - Based on adoption of the CARB EVR Module 2 requirements
  - Increase the required control efficiency of Stage II vapor recovery systems to 95 percent in those counties with existing Stage II requirements
  - Optionally, the control measures could be extended to counties that currently do not have Stage II vapor recovery requirements

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VOC Candidate Control Measures
Gasoline Distribution Facilities

- *Measure SOLV7C – Require Add-on Control Devices on the UST Vent*
  - Based on the use of an add-on control device (such as a membrane system, refrigeration unit, or carbon bed) to reduce vapor growth emissions from the UST vent by 90 percent
  - Three geographic options considered:
    - *All 8-hr nonattainment counties*
    - *All counties in or adjacent to an 8-hr nonattainment area*
    - *All counties in the MRPO region*

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VOC Candidate Control Measures
Portable Fuel Containers

- *Measure SOLV3A – Adopt OTC Portable fuel Container Model Rule Performance Standards*
  - Includes CARB performance standards
  - Assumes a conservative 10-year turnover rate
  - Overall effectiveness is 65% reduction in VOC
  - Geographic applicability
    - *All 8-hr nonattainment counties*
    - *All counties in or adjacent to an 8-hr nonattainment area*
    - *All counties in the MRPO region*

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VOC Candidate Control Measures
Portable Fuel Containers

- *Measure SOLV3B – Provide an Incentive Program to Accelerate Turnover to PFCs Meeting the CARB Performance Standards*
  - Encourage residents and commercial operators to remove old containers from service in order to accelerate the timeframe for achieving emission reductions
  - Designed to increase the attrition rate from 10 to 15% turnover per year in ozone nonattainment areas
  - Obtain emission reductions sooner
  - Emissions reductions expected from an incentive program are dependent on the funding available for implementation

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VOC Candidate Control Measures
Industrial Surface Coating

- *Measure SOLV5A – Adopt More Stringent RACT regulations, lower applicability thresholds, and extend geographic coverage*
  - More stringent requirements include:
    - *Higher transfer efficiencies*
    - *Lower VOC coatings*
    - *Total permanent enclosures*
    - *Thermal/catalytic incinerators*
    - *Eliminating or reducing exemptions*
    - *Lowering the applicability thresholds*
  - Assume 90% reduction from uncontrolled levels is achievable
  - Geographic applicability
    - *All 8-hr nonattainment counties*
    - *All counties in or adjacent to an 8-hr nonattainment area*
    - *All counties in the MRPO region*

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VOC Candidate Control Measures
Cold Cleaning (Degreasing)

- *Measure SOLV6A – Adopt Chicago/Metro East Cold Cleaning RACT regulations in additional areas*
  - Prohibits the use of solvent for cold cleaning with a vapor pressure greater than 1.0 mm Hg at 68°F
    - *except when used in electronics degreasing*
  - 66% reduction from uncontrolled levels
  - Will primarily affect small business and solvent suppliers
    - *Most cold cleaning machines provided through contract with regional and national companies - machine providers would be responsible meeting the solvent volatility limit*
    - *In other cases, the users and solvent providers would have to assure that the solvent meets the required limit*
  - Geographic applicability
    - *All 8-hr nonattainment counties*
    - *All counties in or adjacent to an 8-hr nonattainment area*
    - *All counties in the MRPO region*

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VOC Candidate Control Measures
Consumer and Commercial Products

- *Measure SOLV2A – Adopt OTC Model Rule for Consumer Products*
  - Regulates more consumer products
  - Establishes more stringent VOC limits than the Federal Part 59 rule
  - Achieves VOC emission reductions through the use of product reformulation and product substitution
  - Limits are based primarily on the CARB mid-term limits adopted in 1997 and 2000
  - Emission reductions are estimated to be 14.2% beyond reductions from the Federal Part 59 rule

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VOC Candidate Control Measures
Consumer and Commercial Products

- *Measure SOLV2B – Adopt CARB 2003 SIP Requirements for Additional Products and VOC Limits (in addition to OTC Model Rule)*
  - CARB sets or revises VOC limits for about 13 categories that must be complied with by December 31, 2006
  - CARB committed to develop rules between 2006 and 2008 to adopt new limits for consumer products (either mass-based or reactivity-based) as well as to set limits for previously unregulated categories
  - Combined emission reductions from implementation are estimated to be between 9.7-15.5% from current levels

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VOC Candidate Control Measures
Architectural and Industrial Maintenance Coatings

- *Measure SOLV1A – Adopt More Stringent VOC Content Limits for AIM Coatings*
  - Establish more stringent VOC limits than the Federal AIM rule, based on:
    - *CARB suggested control measure*
    - *OTC Model Rule*
    - *SCAQMD Phase I and II limits*
    - *OTC Model Rule estimated to reduce VOC by 31% beyond the reductions from Federal rule*
  - More stringent VOC content limit for traffic markings
    - *Based on Wisconsin rule NR422.17,*
    - *39% lower than the limit imposed by the Federal rule or the OTC model rule*

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VOC Candidate Control Measures
Architectural and Industrial Maintenance Coatings

- *Measure SOLV1B – Adopt SCAQMD Phase III VOC Emission Limits for AIM Coatings in addition to the OTC Model Rule and WI NR422.17*
  - Provides a 51 percent reduction beyond the reductions obtained from the OTC Model Rule
  - Relies on near-zero or zero VOC formulations for:
    - *cleanup and thinning solvents*
    - *clear wood finishes*
    - *exterior opaque stains*
    - *semi-transparent stains*
    - *sanding sealers*
    - *waterproofing sealers*

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VOC Candidate Control Measures
Architectural and Industrial Maintenance Coatings

- *Measure SOLV1C – Develop Reactivity-Based Limits for AIM Coatings*
  - CARB has funded a $300,000 research project with the University of California, Riverside
  - Mass-based emission reductions are becoming more difficult because architectural coatings have already been reformulated to some extent
  - Target VOCs with the greatest ozone forming potential
  - Cannot determine at this time the additional reductions that might be obtained by developing reactivity-based emission limits for AIM coatings

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VOC Candidate Control Measures
Auto Refinishing

- *Measure SOLV4A – Extend the existing IL/IN/WI RACT regulations for Auto Refinishing beyond 1-hr nonattainment counties*
  - Extend existing RACT rules for the 1-hr nonattainment counties to additional areas. Three options are considered:
    - *All 8-hr nonattainment counties*
    - *All counties in or adjacent to an 8-hr nonattainment area*
    - *All counties in the MRPO region.*
  - 29% percent additional reduction will be applied beyond the 37% percent reduction obtained from the Federal Part 59 rule (i.e., a 55% reduction from uncontrolled VOC emissions).
  - No incremental reduction in the 1-hr nonattainment counties where the existing RACT rules are currently in place.

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VOC Candidate Control Measures
Auto Refinishing

- *Measure SOLV4B – Adopt More Stringent RACT regulations for Auto Refinishing based on SCAQMD 1145*
  - VOC content limits in the SCAQMD rule are more stringent than the federal rule, the OTC model rule, and the existing IL/IN/WI RACT rules for several types of auto refinish coatings.
  - Adoption of a rule similar to SCAQMD Rule 1151 would result in an emissions reduction of 89% from uncontrolled levels.
  - Three geographic options considered:
    - *All 8-hr nonattainment counties*
    - *All counties in or adjacent to an 8-hr nonattainment area*
    - *All counties in the MRPO region*

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VOC Candidate Control Measures
Asphalt Paving

- *Measure SOLV8A – Adopt SCAQMD Rule 1108.1 VOC content limit for emulsified asphalt*
  - limit of 3 percent content limit for oil distillate for slow, medium, and rapid setting emulsified asphalt

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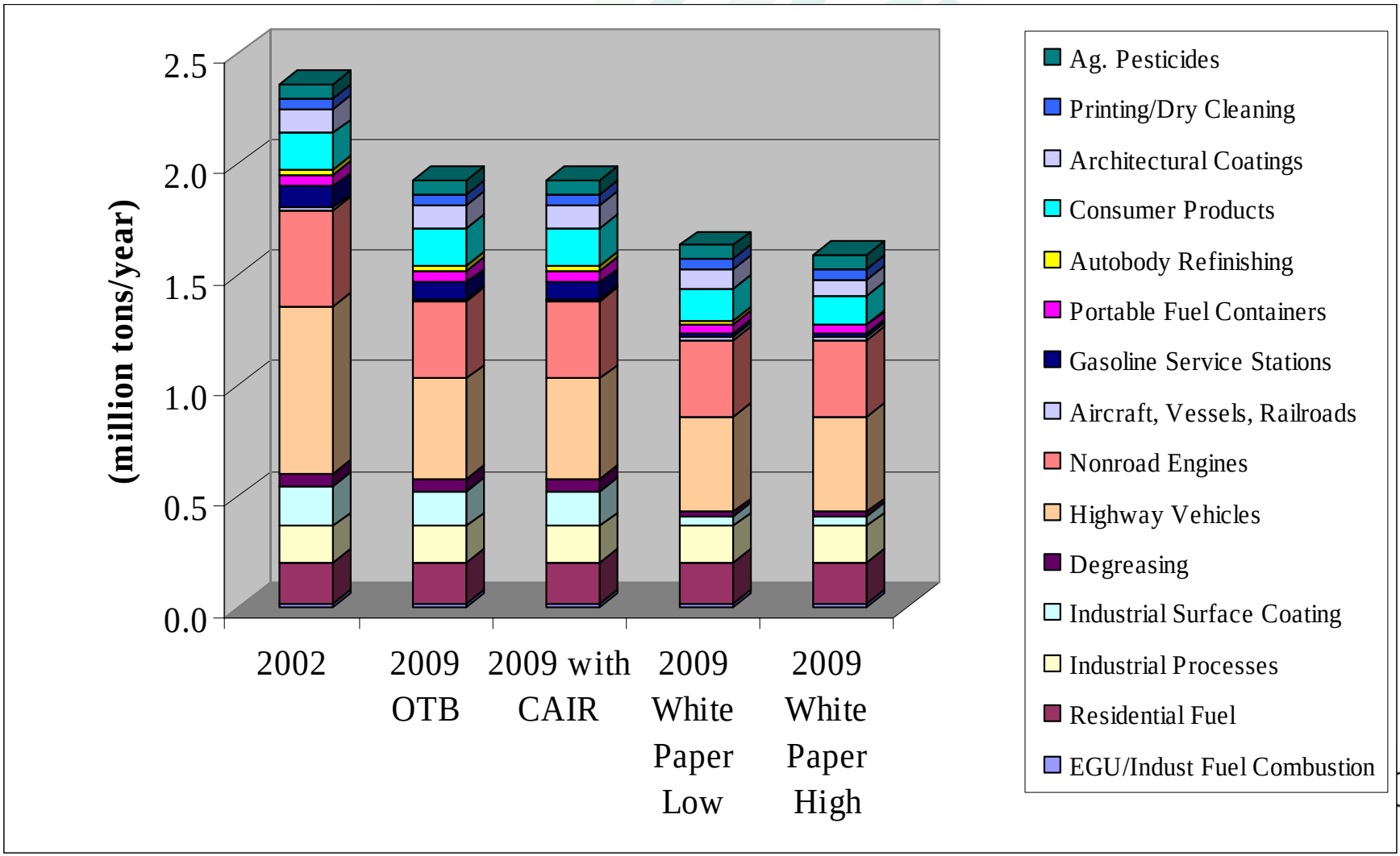
Projected VOC Emissions with Candidate Control Measures



Next Steps

- Summer (and beyond): Further Refinements Based on Feedback and Updated Results from AQ Modeling
- Phase II Candidate Control Measures Project
  - Update existing White Papers
  - Possibly develop new White Papers for point/area sources of VOC
  - Develop White Papers for on-road/non-road sources
  - Sources of Organic PM2.5?

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