

# A luminum Industry Greenhouse Gas Achievements

Program Update for the  
Climate Vision Workshop



February 2006



# VAIP Objectives

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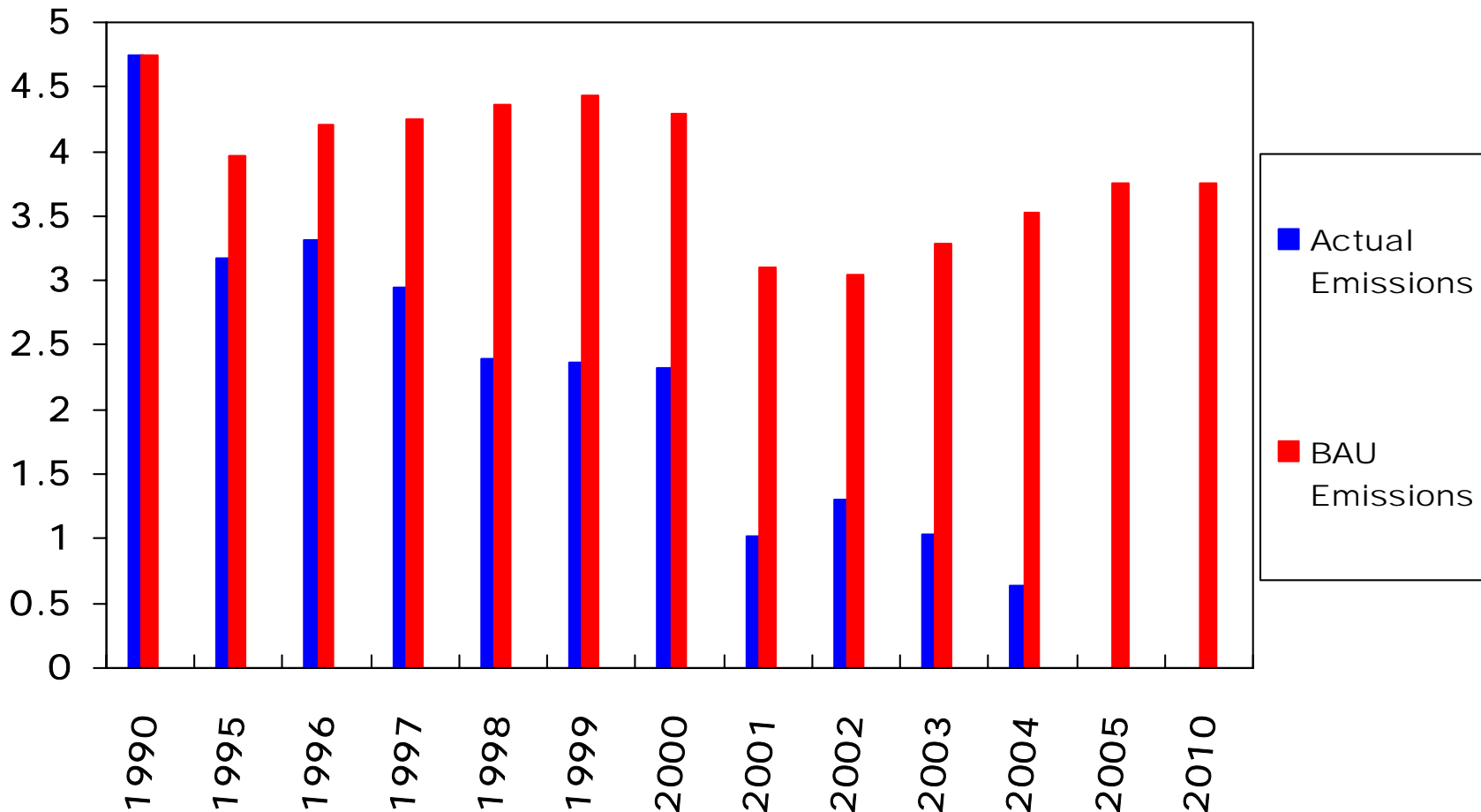
- Reduce PFC Emissions from aluminum reduction plants by 40% 1990 to 2000
- Standardize, with the EPA, the measurement method, monitoring emissions, validate emission factors
- R&D to elucidate PFC physical-chemical formation from anode effects

# VAIP Program History

- 1994 EPA initiates dialog w/ primary aluminum producers
- 1995 Agreement on measurement & reporting protocol
- 1996 U.S. partnership launched w/ 98% participation
- 1999 Power costs lead to Columbia Falls, Kaiser, Alcoa, Goldendale/NW and other facilities curtailing production
- 2000 Achieved MOU1 goal independent of curtailments
- 2001 MOU2 Extends partnership to 2005 w/ new PFC goal
- 2002 VAIP members receive EPA Climate Protection Award
- 2003 Climate VISION Goal – Direct Carbon eq. intensity
- 2004 “Model of Excellence” for Government /Industry Negotiated Agreements

# VAIP PFC Accomplishments

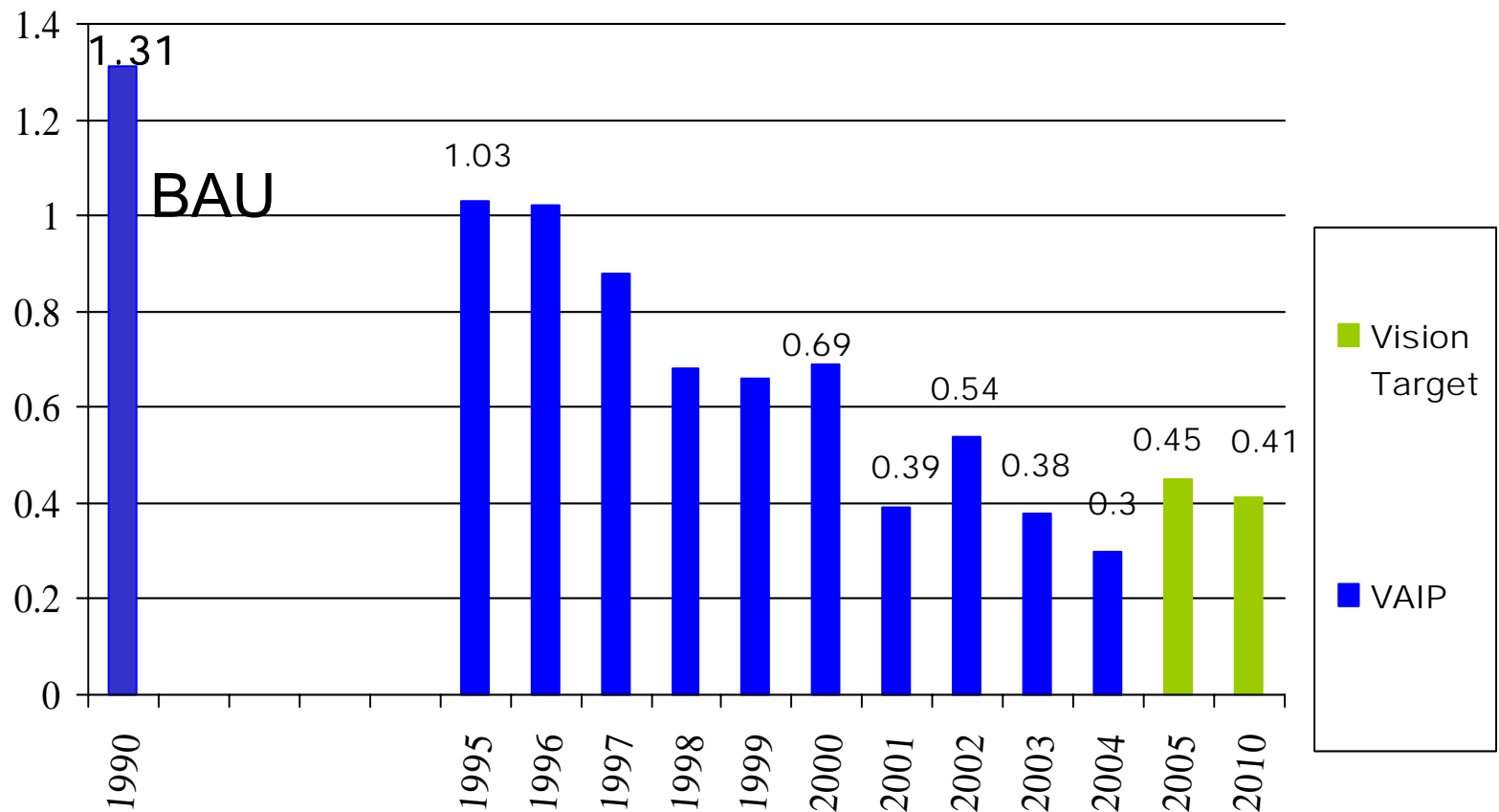
MMTCE (So. MOUcompare2.5.04.xls)



\*Source: EPA Climate Protection Division

# PFC Emissions Intensity

TCE / tonne



# Data Quality Contributions

- MIT Basic Research on frequency and duration of anode effects
- Developed Standard EPA PFC Measurement Protocol (being adopted internationally with WRI and now IPCC)
- Developed domestic and global emission factors by technology type

# Climate VISION Commitment

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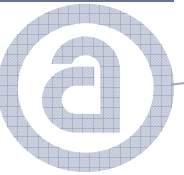
- Assumes adoption of current or near-term technology
- Adoption of most cost-effective technology at respective facilities
- Continuous energy efficiency and operational improvements
  - improvements in chemical bath
  - process controls to reposition the anodes
  - accelerate PFC efforts

# Climate Vision Work Plan

- Measurement, reporting and reduction of Primary Aluminum direct GHG's
- Cross-sector projects to achieve Vision goals:
  - Municipal curbside can recycling awareness program
  - Spent Potliner cement kiln test demonstration
  - Transportation sector efforts on light-weighting and recycling
- Longer Term R&D for technology development and commercialization



# 2004 Partners 98% Industry Emissions



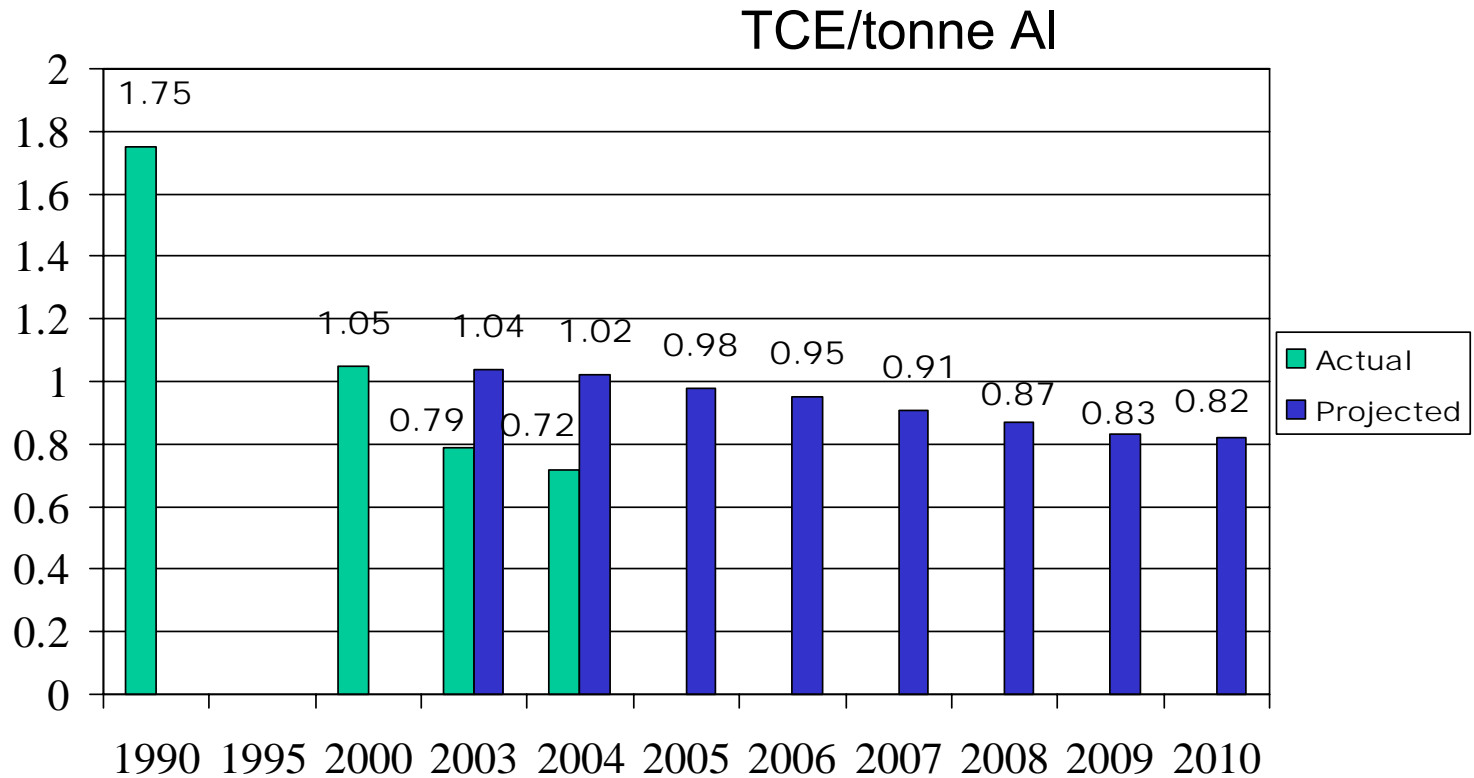
- Alcan
- Alcoa
- Century
- Columbia Falls
- Noranda
- NW Goldendale\*
- Aluminum Association

\*curtailed production

# Climate VISION

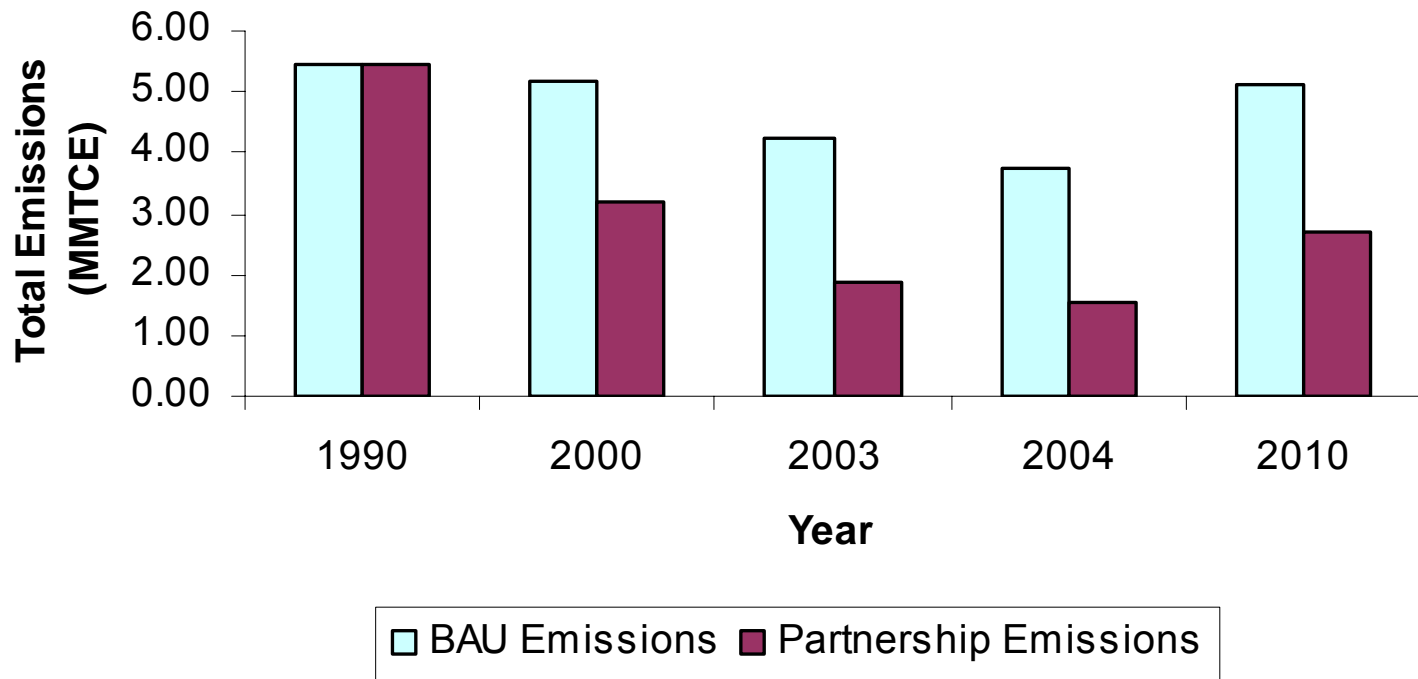
## Commitment & Progress

**Direct Process Emissions Goals :**  
**53% below Year 1990; 25% below Year 2000**



# Direct Carbon Emissions

## BAU vs. Partnership Emissions



# A Aluminum Industry Greenhouse Gas Achievements

Aluminum Can Council  
Curbside Value Partnership

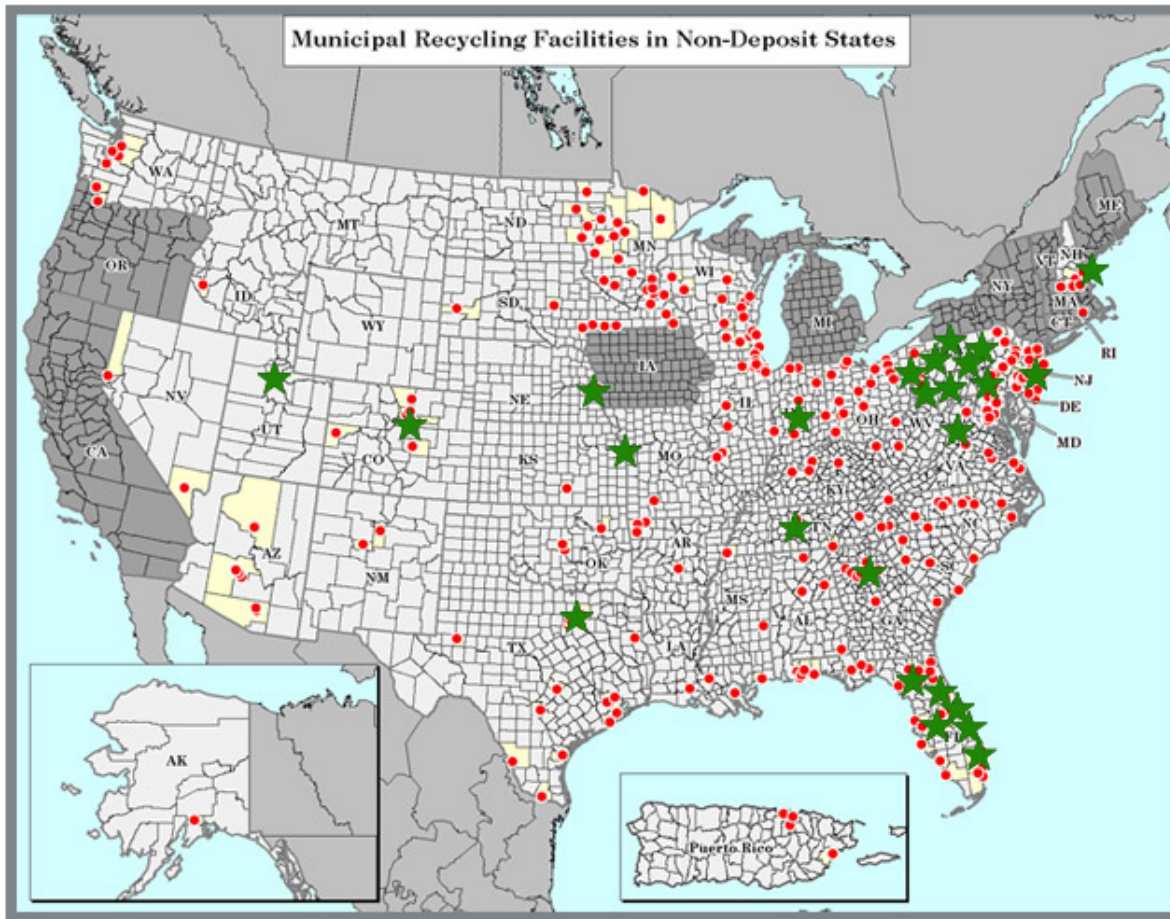


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# What the CVP does

1. Aims to increase the aluminum can recycling rate
2. Creates a cost effective model for cities to implement self-sustaining recycling programs.
  - **Participation**
    - Household bin use
    - Household recycling of valuables
  - **Value**
    - Municipalities recognizing business model
    - MRFs practicing measurement and reporting

# CVP Partners



Red dots – existing MRF communities; Green stars – CVP partners Nov. 2005

# CVP Goals

- 75% of top 100 MRFs by 2006
- Each Partner City runs annual household bin drives and recycling “kitchen” promotions
- Standardized commodity reporting
- 1-2% national UBC lift by 2006-2007, as tracked by CVP Partner aluminum lift rates

# A luminum Industry Greenhouse Gas Achievements

Spent Potliner Test Demonstration  
for Resource Recovery



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# Spent Potliner Testing Strategy

- Utilize SPL as an alternate fuel in a US cement kiln and gather information on:
  - Environmental effects
  - Product effects
  - Operational effects
- Determine the viability of SPL logistics management
- Phase I feasibility testing completed in spring 2004
- Phase II testing for air emissions, product effects and logistics engineering completed in fall 2005

# SPL Test Program Summary

- A complete dataset is now available
  - No adverse environmental effects noted
  - Product effects
    - Alumina and silica beneficial
    - Sodium and fluoride incorporation could be beneficial, acceptable, or detrimental dependent on the raw material mix
  - Operational effects
    - None adverse
    - Potential significant benefit in kiln operation possible with optimization
    - SPL handling and logistics perfected
- Energy savings from SPL use
  - Fuel replacement
  - Fluxing

# A luminum Industry Greenhouse Gas Achievements

Energy Efficiency in the  
Transportation Sector



The Aluminum Association, Inc.

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# Auto Safety and Light Weighting

**MISSION:** “To accelerate the use of aluminum in automotive structures and components by demonstrating and promoting that it is the material of choice for high-value, safe, environmentally responsible, and superior-performing vehicles.”

