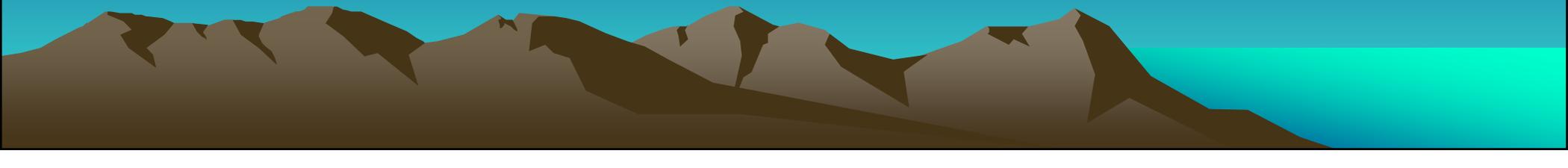


# Best Available Retrofit Technology

## Engineering Analysis & TCEQ Form EA-1

Arturo J. Garza  
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# Overview

- Regulatory Background and Applicability
- Engineering Analysis Guidance\* Review
  - BART analysis process
  - Control alternative selection
- Form\* EA-1: Layout & Use

\*[basis documents currently in 'draft' status]



# Regulatory Background

- FCAA; Improve Visibility @ Class I Areas
- 40 CFR Part 51, Subpart P, App. Y
- 30 TAC 116, Subchapter M
- SIP Incorporation - Dec. 17, 2007
- EA Submittals - Apr. 30, 2007



# Applicability

## BART Eligible Sources

- Any of 26 Named Source Categories
- PTE 250 TPY for NO<sub>x</sub>, SO<sub>2</sub>, or PM
- Built or Reconstructed Aug.7, 1962-1977
- Assess Visibility Impacts @ Class I Areas



# Applicability

## BART Subject Sources

- Visibility Impairment Assessment
- Exclusion of 1 or More Sources
- Model Remaining Sources
- Determine if any Contribute to VI
- If Yes, Source is Subject



# BART Analysis Process

- Preliminary Considerations
- Identification of Control Options
- Technical Feasibility
- Control Effectiveness
- Comprehensive Effects Analysis
- Visibility Analysis



# Preliminary Considerations

- Emission Unit and Pollutant Specific
- Evaluate Existing Controls
- MACT, BACT, NSPS, LAER
- Determine if these meet BART
- Proceed with BART Analysis



# Identification of Control Options

- All Available with Practical Potential
- BACT (any Tier), LAER, MACT, NSPS
- Prevention, Add-on, Combinations
- Improve / Retrofit Existing Controls
- NSPS Not Necessarily BART in All Cases



# Identification of Control Options

- Exercise Complete if:
  - Most stringent controls proposed
  - Federally enforceable
- References & Resources
  - EPA ( Clean Air Technology Center, RBLC, OAQPS, etc.)
  - Local/State/Federal BACT, NSR Permits
  - See EA Guidance for full list



# Technical Feasibility

- Basic Considerations & Key Concepts
  - Technical difficulty of each option
  - Demonstrations of technical infeasibility
  - Physical, chemical, engineering
  - Available technology
  - Applicable technology



# Technical Feasibility

- Technical Feasibility Indicators
  - In place or potentially applied to source type
- Technical Infeasibility Considerations
  - Commercially unavailable
  - Specific precluding circumstances
  - Stream & control strategy characteristics
  - Summarize technical difficulties



# Control Effectiveness

- Appropriate Comparison Metrics
  - Consistent basis for evaluating performance
  - Consider avg. emissions / unit produced
- Evaluating Wide Range of Performance
  - Most stringent control
  - Recent or current regulatory decisions, data
  - Special circumstances
  - Improvement alternatives for retrofits



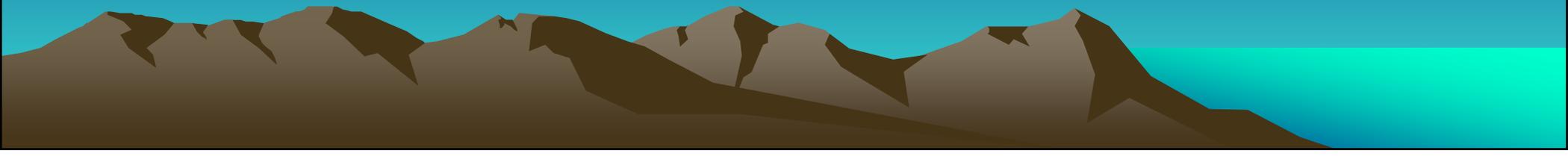
# Impacts Analysis

- Cost
- Energy
- Environmental (other than air quality)
- Remaining Useful Life



# Cost of Control Analysis

- Identify EU Controlled
- Identify Controls and Design Parameters
- Develop Cost Estimates, Considering:
  - Average cost effectiveness
  - Incremental cost effectiveness
  - Baseline emissions
  - Permitting decisions, special circumstances
  - Remaining useful life



# Energy Impacts Analysis

- Energy Costs and Benefits
- Direct Energy Consumption (e.g., BTU, kWh, etc.)
- Locally Scarce Fuels
- Local vs. Regional Alternatives
- Report DEC Units & \$ / Ton of Reduction



# Environmental Impacts

- Solid/Hazardous Waste
- Water Discharge
- Land Use Effects
- Consider Site/Stream Specifics
  - Mass, composition, fate, etc.
- Waive for Most Stringent Strategy



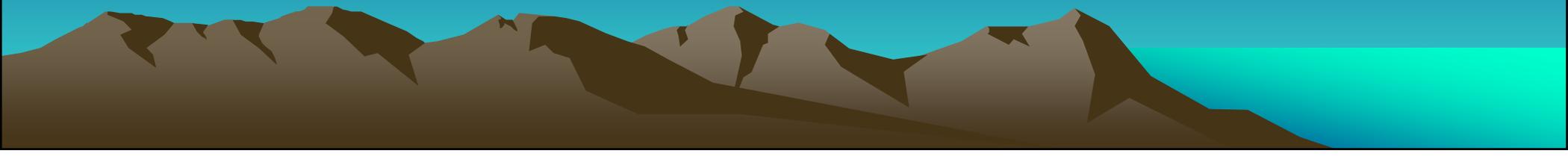
# Remaining Useful Life Analysis

- Short RUL Affects Costs
- $RUL > \text{Amortization Period/AC}$ ; No Effect
- RUL: Operations Stop – Controls in Place
- Shorter RUL May Require More Control
- May Define BART Limit
- 5 yrs. to Implement Indicated Controls



# Determine Visibility Effects

- Develop Modeling Protocol
- Model Pre/Post Emission Rates
- Determine Net Visibility Improvement
- Use of Comparison Thresholds
- Compare 98<sup>th</sup> %-ile Pre/Post Results



# Strategy Selection

- Characterize Feasible Alternatives
- Select Best Alternative



# Characterize Feasible Options

- Emission Rates and Reductions
- Performance Level
- Control/Compliance Costs
- Energy Requirements
- Environmental Effects
- Visibility Impacts



# Strategy Selection

- Identify the Evaluated Options
- Show Average & Incremental Costs
- Consider Impacts Analysis Findings
- Consider FCAA factors
- Justify Selection



# Form EA-1

- Layout
  - Instructions pages
  - Tables pages
- Use
  - Introductory information
  - BART eligible units subject to MACT
  - Baseline conditions and visibility impacts
  - BART analysis
  - BART conclusion

# Introduction

- Executive Summary
- Table 1: Summary of Proposed BART



# Eligible Units Subject to MACT

- Table 2: MACT = BART for Eligible Units
  - Applicable MACT for affected pollutants
  - EU info., regulated pollutant, MACT limit
  - Rationale for MACT = BART



# Baseline Conditions and Visibility Impacts

- Table 3: Baseline Modeling Conditions
- Table 4: Basis for 24 Emissions Data
- Table 5: Baseline Visibility Results



# BART Post-Control Analysis

- Table 6: Emissions
- Table 7: Stack Parameters
- Table 8: Visibility Results



# BART Conclusions

- BART Proposal
  - Selected strategy and justification
  - Compliance schedule
- Impacts Analysis Summary
  - Evaluated strategies and pollutants
  - Emission reductions
  - Costs



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