SOCIOECONOMIC STUDY OF THE IMPACT OF URANIUM MINING

Virginia Commission on Coal and Energy

Uranium Mining Sub-Committee

December 8, 2010

CHMURAECONOMICS&ANALYTICS

NATIONAL IMPACT

- Nuclear power is an energy source that is neutral to green house gas emissions (GHG)
- Safely mined uranium is needed to fuel the plants

STATE IMPACT

- $Billions in uranium reside in Virginia that translate into tax revenues
- Regulatory and safety issues are paramount

REGIONAL IMPACT

- Boom: Take the ore to market
- Bust: Safety and environment is compromised

CHMURA TEAM

- Credible
- Diverse
- Objective
- Thorough

CHMURA TEAM

- Chmura Economics & Analytics
  - You know us
  - Economic, workforce, software solutions
- Issues Management Group

Rob Glenn
Utilities engineer; economic development; focus groups

Broaddus Fitzpatrick
Attorney, environmental/conservation experience in study area

- Lisa Catron Ison
  Rural economic development, feasibility studies
- Glenn Pfennigwerth

  - 30 years experience, uranium processing
  - MS chemical engineering
  - Employed at Y-12 National Security Complex, Oak Ridge TN

OVERALL APPROACH

- Initial meeting with key stakeholders to create final delivery plans
- Incorporate prior research/reduction of duplicated efforts
- Case studies
- Creation of oversight group

ASSUMPTIONS

- Case study approach assumes uranium mining and milling operation in Chatham would be benchmarked to similar technologies and management as other mines in the nation
- There is sufficient sustained market demand for uranium
- A Steering Committee will be formed that will
  - Be available for preliminary meeting to fine-tune scope of work
    - Approve regional labor market shed
    - Approve environmental impact region/watershed
  - Advise Chmura Team to discuss project with Virginia Uranium
  - Assist in establishing a collaborative connection between Chmura Team and National Academy of Sciences
  - Assist in making state staff available to Chmura Team

APPROACH: I. ECONOMIC DEVELOPMENT

- Economic impact – IMPLAN Pro, direct & indirect impact
  - Construction of the mine and milling plant
  - On-going operations
  - Cessation of active mining and milling operations
  - Revenue to local and state governments
- Property values
  - Case studies
- Occupational impact
  - Chmura's proprietary and patented JobsEQ

What-If Report for Colorado, NAICS 2122 - Metal Ore Mining, Firm Size of 100

Add this firm to LBP

Occ Code	Title	New Employer Demand	Current Empl	Regional Avg Wage	Nationa Avg Wage
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	8	2,096	$45,300	$44,30
47-2073	Operating Engineers and Other Construction Equipment Operators	8	7,466	$42,500	$43,60
53-3032	Truck Drivers, Heavy and Tractor-Trailer	6	22,312	$40,200	$38,70
47-5041	Continuous Mining Machine Operators	6	302	$48,800	$45,600
47-5042	Mine Cutting and Channeling Machine Operators	5	219	$45,800	$41,500
47-2111	Electricians	4	10,181	$45,400	$49,900
49-9041	Industrial Machinery Mechanics	3	3,324	$45,500	$45,300
49-9042	Maintenance and Repair Workers, General	3	21,318	$35,100	$35,600
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	3	187	$99,900	$79,900
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	2	508	$35,400	$31,400
47-1011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	2	10,100	$60,600	$61,300
47-5049	Mining Machine Operators, All Other	2	119	$49,200	$43,200
49-101	[illegible] Repairers	2	7,331	$59,200	$59,200
1-1011	[illegible] Workers	2	6,875	$52,700	$53,500
1-9012	[illegible] Tenders	2	622	$33,300	$38,000
7-5031	Explosives Workers, Ordnance Handling Experts, and Blasters				

WHAT-IF REPORT

- Metal Ore Mining (NAICS 2122)
- Colorado

APPROACH: II. GOVERNMENT SERVICE/ REGULATION

- Regulatory – Case study/research approach with primary, secondary, tertiary potential effects over time
  - Nuclear Regulatory Commission,
  - Federal Energy Regulatory Commission,
  - Environmental Protection Agency ,
  - U.S. Navy
- Local costs for infrastructure, schools, planning, potential funding – Case study/research approach
  - Virginia coal mines, such as Alpha Resources
  - States in U.S. where uranium is mined
    - » 2007 Colorado House Bill 1161 requires applicants for an *in situ* leach mine to demonstrate five successful mines under similar conditions before a mining permit is issued.*
    - » *Source: http://www.pecva.org/anx/ass/library/335/c-e-commission-letter.pdf

APPROACH: III. PUBLIC HEALTH / ENVIRONMENT

- Case study / research
  - Cost of health care and illness
  - Impact on natural landscapes, tourism, hunting, fishing, etc.
  - Environmental justice impacts and disaster costs
  - Post closure procedures and costs
  - Awareness of the watershed (Roanoke River watershed) and the need to be sensitive to North Carolina (flows to Albemarle Sound)
- Experience
  - Developed proactive health plan for western Virginia region
  - Wildlife to historic preservation
  - Involved with programs to improve the quality of life of economically disadvantaged citizens

APPROACH: IV. SOCIAL IMPACTS

- Effects of internal and external image of region
  - SWOT (strength, weakness, opportunities, threats) analysis
  - Region-specific and case studies such as Wyoming/Colorado
- Case studies/research
  - Public confidence in the company/government to control adverse effects – 'life cycle' view of best practices/ potential unforeseen threats
  - Impacts on private schools and local institutions
    - Perceived impact on enrollment of schools in area
    - Ability of training providers to train workers for skills needed at uranium mine and milling operations
  - Impact on aesthetics and overall quality of life
    - Measure impacts where uranium mining is occurring
    - Potential surveys/interviews

Questions?