

URANIUM MINING IN VIRGINIA

Proposed Scope of Work for a Technical Study

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Charge and Scope of Work

- The Charge of the Virginia Center for Coal and Energy Research (VCCER) was to develop a **Scope of Work** for a study, or studies, addressing Uranium mining in Virginia
- The developed Scope of Work can provide a framework for a comprehensive study by a Committee of world class experts
- The Scope of Work should be **broad** to allow such a Committee to expand, fully discuss all aspects of the topic and provide appropriate recommendations

VCCER Recommendations

- Recommendations are based on knowledge, experience and review of relevant published information
- Attendance in public meetings called by the Sub-Committee
- Review of information submitted to the Sub-Committee
- The basic role of VCCER will be **completed** when entities to conduct studies have been identified and a processes to perform work has been established

VCCER Recommendation 1- Technical Study :

- **Objectives:** *To Assess the Scientific and Technical Aspects of Uranium Mining, Milling and Processing in Virginia and Associated Environmental, Human Health, Safety and Regulatory Issues*

VCCER Recommendation 2- Socio-Economic Study:

- **Objectives:** *To Address Site- and Region-Specific Social, Economic and Environmental Impacts and Sustainability Factors Such as Quality Of Life, Infrastructure, Local Economic Opportunities and Property and Real Estate Values*

VCCER Recommendation 3- Technical Study Approach

- Engage the National Research Council (NRC) to undertake this study
 - The NRC will establish a Committee of nationally recognized experts
 - Study will be completely independent
 - Typical duration of an NRC study is about 18 months
 - Cost will reflect the scope, depth and expected timing of the final report

Tentative Technical Study Outline

Study Will Review:

- 1. URANIUM SUPPLY/DEMAND TRENDS AND PROJECTIONS**
- 2. WORLDWIDE URANIUM DEPOSITS AND OPERATIONS**
- 3. URANIUM DEPOSITS IN VIRGINIA**
- 4. URANIUM MINING, MILLING AND PROCESSING TECHNOLOGIES**

Tentative Technical Study Outline

Study Will Assess:

5. OCCUPATIONAL AND PUBLIC HEALTH AND SAFETY
6. SECURITY STANDARDS AND PROCEDURES
7. ENVIRONMENTAL CONSIDERATIONS
8. CLOSURE AND POST-MINING LAND USE AND MONITORING
9. REGULATORY CONSIDERATIONS AND PUBLIC OUTREACH IN VIRGINIA
10. FINDINGS AND RECOMMENDATIONS

Detailed Outline

1. URANIUM SUPPLY/DEMAND TRENDS AND PROJECTIONS

- GLOBAL, NATIONAL AND STATE
- SHORT-TERM AND LONG-TERM TRENDS
- COSTS, PRICES AND MARKETS

2. WORLDWIDE URANIUM DEPOSITS AND OPERATIONS

- DEPOSIT CHARACTERISTICS AND LOCATIONS (GEOLOGY, CLIMATE, ETC.)
- OPERATION CHARACTERISTICS
- COSTS AND MARKETS
- BEST PRACTICES
- CURRENT ISSUES AND CONCERNS

Detailed Outline (cont.)

3. URANIUM DEPOSITS IN VIRGINIA

- OCCURRENCE
- GEOLOGIC, ENVIRONMENTAL, CULTURAL, CLIMATIC, AND GEOGRAPHIC SETTINGS
- PHYSICAL AND CHEMICAL CHARACTERISTICS
- STATUS OF CURRENT EXPLORATION
- AVAILABLE BASELINE DATA
- ECONOMIC FEASIBILITY
- COMPARISON OF POTENTIAL URANIUM OPERATIONS IN VIRGINIA WITH GLOBAL DEPOSITS AND PRACTICES

4. URANIUM MINING, MILLING AND PROCESSING TECHNOLOGIES

- REVIEW OF CURRENT TECHNOLOGIES AND POTENTIAL NEW TECHNOLOGIES
- APPLICATION OF TECHNOLOGIES/PRACTICES TO VIRGINIA DEPOSITS
- PROBLEMS AND ISSUES
- AVAILABLE INFORMATION
- KNOWLEDGE GAPS AND AREAS FOR RESEARCH

Detailed Outline (cont.)

5. OCCUPATIONAL AND PUBLIC HEALTH AND SAFETY

- RADIOLOGICAL HAZARDS AND RISKS
- OCCUPATIONAL HEALTH AND SAFETY CONCERNS
- CONSIDERATIONS FOR LOCAL COMMUNITIES
- SHORT- AND LONG-TERM CONSIDERATIONS

6. SECURITY STANDARDS AND PROCEDURES

- HAZARDOUS MATERIALS MANAGEMENT
- PERSONNEL SECURITY
- MATERIAL CONTROL AND ACCOUNTABILITY
- TRANSPORTATION SECURITY
- INFORMATION SECURITY
- SITE SECURITY

Detailed Outline (cont.)

7. ENVIRONMENTAL CONSIDERATIONS

7. POTENTIAL IMPACTS ON AIR AND LAND
8. GROUND- AND SURFACE-WATER IMPACTS AND PROTECTION
9. WATER MANAGEMENT INCLUDING NET CONSUMPTION/RECYCLING
10. WASTE MANAGEMENT INCLUDING OVERBURDEN, WASTE ROCK AND TAILINGS
11. ECOSYSTEM EFFECTS
12. OTHER ENVIRONMENTAL HEALTH ISSUES
13. RISK MODELING AND IMPACTS OF SEVERE WEATHER EFFECTS OR OTHER STOCHASTIC EVENTS
14. NOISE, AESTHETICS, TRAFFIC AND OTHER LOCAL CONSIDERATIONS

Detailed Outline (cont.)

8. ***CLOSURE AND POST-MINING LAND USE AND MONITORING***
 - MINESITE MONITORING
 - MONITORING OF TAILINGS AND OTHER WASTES
 - MONITORING OF LOCAL GROUNDWATER AND SURFACE WATERS
 - SITE RECLAMATION
 - LONG-TERM LAND USE IMPACTS AND RESTRICTIONS
 - OFFSITE ECOLOGICAL MONITORING
 - POST-CLOSURE FINANCIAL RESPONSIBILITY AND LIABILITIES
9. ***REGULATORY CONSIDERATIONS AND PUBLIC OUTREACH IN VIRGINIA***
 - HEALTH AND SAFETY REGULATIONS
 - ENVIRONMENTAL AND MINING LAWS AND REGULATIONS
 - INSPECTION AND ENFORCEMENT
 - COMMUNITY RIGHT-TO-KNOW AND EMERGENCY PLANNING
 - EDUCATION AND OUTREACH
10. ***FINDINGS AND RECOMMENDATIONS***

VCCER Recommendation 4- The Way Ahead for the Technical Study

- The Uranium Mining Subcommittee of the Coal and Energy Commission approves the Tentative Outline of the Technical Study proposed by the VCCER
- VCCER can then formally engage the NRC in discussions
- Based on any input by NRC and others, the study can be finalized and form the basis for entering final agreement

VCCER Recommendation 5- The Socio-Economic Study

- The Socio-Economic Study outline is still *work in progress*
- Finalize after the technical study has been established
- Identify well-recognized entities that can conduct an independent, thorough and comprehensive study