# **Summary Report:**

# 4 Regional DOE Critical Minerals Workshops and National Laboratories Workshop

**Division of Minerals Sustainability** 





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# Methodology

• Goal: Create unique and engaging workshop format with Regional focus to provide targeted input to DOE

"I've been on a lot of these things over the past year. This was well organized. I think having the questions that you had really gave some direction to it."

- Workshop presentation and discussions organized around RFI Topic areas
- Audience by invitation regionally = 300+ participants in 5 workshops
- Speakers thought leaders varied with each workshop
- Specific questions asked to all participants, revised as needed
- Direct and meaningful facilitation, no silent partners, inclusive
- Analyze transcripts by workshop for themes, combine for Summary Report
- Reconnect with participants to solicit additional input and distribute reports
- Overwhelmingly positive feedback





## 5 Workshops



Western Region November 19, 2020



**Eastern Region** December 17, 2020



**Gulf Coast Region** January 19, 2021



Midwest/Plains Region February 11, 2021



**National Laboratories** 

March 11, 2021

### Demographics: Participants by Workshop



Breakdown of number of participants per workshop, n = 300+

### Demographics: Participants by location in Supply Chain

#### Total Participants of all four (4) Regional Workshops & NL Workshop

- 272 participants registered
- 300+ attended including US DOE, USEA, notetakers, and facilitators
- 160 organizations represented



Demographic breakdown of poll participants from the four regional workshops. n = the cumulative number of participants who responded to the poll question = 121.

### Demographics: Participants by location in Supply Chain

#### Total Participants of all four (4) Regional Workshops & NL Workshop

- 272 participants registered
- 300+ attended including US DOE, USEA, notetakers, and facilitators
- 160 organizations represented



National Laboratory Research Relative to Supply Chain. n = number of participants who responded to the poll question = 21.

## Poll: What are the Supply Chain Needs?



Supply chain by perceived policy need based on all five workshops.

n = the cumulative number of participants who responded to the poll question.

## Poll: What is your CM Assets Level of Awareness?



Awareness of regional RE and CM assets from all five workshops. n = the cumulative number of participants who responded to the poll question = 159.

# Priority Observations from the Workshops

- 1. Address the themes in a tiered approach, prioritizing the Top 10
- 2. Continue & expand regional mineral district concept for materials & waste streams vary across regions
- 3. Facilitate knowledge sharing, encourage development of networks & working groups among regions
- 4. Correlate the regional findings so that cross-cutting ideas generated through NL & other collaborations can be applied to the regional context (e.g., one size does not fit all)
- 5. Understand & highlight regional differences by introducing flexibility in the CORE/CM funding approach, considering not all regions share the same continuum of resource characterization, development of processing, and access to waste materials
- 6. Assess policy needs & barriers relative to supply chain, economics, & leveling international playing field
- 7. Encourage broad stakeholder participation in international standards development
- 8. Further consider cross-agency & extramural NL to support, coordinate, & expand CM/RE networks, projects, & programs
- 9. Facilitate ongoing collaboration with NL & stakeholders to develop a CM/RE implementation road map
- 10. Create ways to bring together NL & stakeholders to engage the strong desire for future collaborations

Priority Observations from the Workshops

### Broken into four (4) categories:

- 1. Resource & Operational Considerations
- 2. CORE/CM Regional Focus
- 3. International Activities
- 4. Stakeholders & National Labs



**ENERGY** 

### Priority Observations – Resource & Operational Considerations

#### 1. Address the themes in a tiered approach, prioritizing the Top 10

Blockchain Risk Stakeholder Engagement Underclay's Liability/risk Property Rights Standards Unconventional Exploration Shale Circular Economy Collaborate Inorium Machine Learning Mineral Districts Sensor Markets Permitting Smelting Separation Technology Public Battery Mapping Environmental Characterization Carbon Economic Coal ESG Deposits Social Extraction Education Funding Workforce Mining China Supply Chain Ithium Streamline Waste Sustainability Resources Data Federal Government Indowner Manufacture Digital Community By-products Helium NEPA Ash Phosphate Extraction Produced water

### Tiers of Cumulative Frequency of Themes by Participants



### Priority Observations – Resource & Operational Considerations

- 1. Address the themes in a tiered approach, prioritizing the Top 10 main issues, in order of priority:
  - Mining most discussed topic, existing mines, re-use of mines & mine waste
  - Data mission critical
  - **Sustainability** value chain, business models, recycling, & utilization of waste streams
  - Waste & Technology recycling, waste processing, resources, separation, extraction
  - Education policy context, K-12 STEM to workforce
  - Federal Government role and need for organization across government
  - Economic bonding, market considerations, property rights for waste streams, & China's role/control of market

"And we somehow have got to get the public to understand that their lifestyle depends on...this...[and] policy would definitely go a long way to help get the public to understand this."

"We can't manage what we cannot measure"

### Tiers of Cumulative Frequency of Themes by Participants



Tier 1 or Top 10 themes presented in a wheel graph

### RFI Focus Area Applicability to CM Workshop Results



"...we need a framework that says, what are we going to have, trying to accomplish, by when?"

# Priority Observations – CORE/CM Regional Focus

- Continue & expand regional mineral district concept with respect to materials & waste streams which vary across regions
- 3. Facilitate knowledge sharing, encourage development of networks & working groups among regions
- 4. Correlate the regional findings so that cross-cutting ideas generated through NLs & other collaborations can be applied to the regional context
- 5. Understand & highlight regional differences by introducing flexibility in the CORE/CM funding approach, considering not all regions share the same continuum of resource characterization, development of processing, & access to waste materials

"We need to find a way to implement the policy of 'no molecule left behind' and extract every mineral along the extraction, processing, and separation process, regardless of the economic factors"

# Regional Characteristics from Workshops



**Western Region** = strong mining focus, existing inventory



**Eastern Region** = recovery from coals & waste streams



**Gulf Coast Region** = offshore (non-starter), perceived lack of data, perception of behind other regions, some mention of USGS Earth MRI



Midwest & Plains Region =

existing resources, geologic focus, USGS Earth MRI, best presenters

## Priority Observations – International Activities

6. Assess policy needs & barriers relative to supply chain, economics, & level the international playing field

7. Encourage broad stakeholder participation in international standards development

> "...we don't do a good job of making the case about why this is important."

"China is losing billions to

make trillions"

## Priority Observations – Stakeholders & National Labs

| Consider   | Facilitate   | Create   |
|--|--|--|
| 8. Further consider<br>cross-agency &<br>extramural NLs ways<br>to support,<br>coordinate, & expand<br>CM/RE networks,<br>projects, & programs | <b>9.</b> Facilitate an ongoing collaboration with NLs & stakeholders to develop a CM/RE implementation road map | <b>10.</b> Create ways to bring together NLs and stakeholders to engage and further the strong desire for future collaborations. |

"I think there's a huge public education component that needs to be undertaken." "We had a great model in the Bureau of Mines, and then we abandoned it"

## Value Added to DOE from this Process...

- DOE well-positioned to ask key questions & drive integration across Administration, Earth MRI & similar programs, fill former Bureau of Mines gap...what is needed, when, where, and led by whom?
- Allows DMS & FECM to communicate & coordinate across DOE & Administration
- The workshops were significantly successful, however they were "invitation-only" and may have bias.
  Expanded the "facilitated workshop" approach with a wider & broader stakeholder group (today's event), including the CORE/CM Initiative
- Potential to replicate *RCSP-style "Working Groups"* across the new CORE-CM Initiative to address topics such as stakeholder engagement, international standardization, data collection & dissemination, and assessment of the CM/RE asset continuum; beginnings of best practices development.
- Workshops confirmed this high-value approach and identified significant desire for collaboration, especially by the National Laboratories. Considering how best to continue & expand this momentum with NLs and Partnerships/Consortia

## ...led to the Summary Report...

Summary Report and Appendix to Critical Minerals Sustainability Program Plan: Summary, Synthesis, and Analysis of USEA's Workshops on Critical Minerals Sustainability



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• Executive Summary

- Introduction
- Objective
- Method
- Demographic & Poll Results
- Themes & High Level, Non-regional/Programmatic Observations
- Thematic Data Analysis
- National Laboratory Workshop
- Synthesis & Observations
- APPENDIX A: Workshop Agendas
- APPENDIX B: Breakout Session Registrants
- APPENDIX C: Participant Themes, Criteria, or Phenomenon



### ...which led to RFI & Multi-year Program Plan





### Questions, Comments, Concerns

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