

**ALASKA STATE LEGISLATURE  
SENATE RESOURCES STANDING COMMITTEE**

March 26, 2025

3:30 p.m.

**MEMBERS PRESENT**

Senator Cathy Giessel, Chair  
Senator Bill Wielechowski, Vice Chair  
Senator Matt Claman  
Senator Forrest Dunbar (via teleconference)  
Senator Scott Kawasaki  
Senator Shelley Hughes  
Senator Robert Myers

**MEMBERS ABSENT**

All members present

**OTHER LEGISLATORS PRESENT**

Representative Ky Holland

**COMMITTEE CALENDAR**

PRESENTATION(S): ALASKA CRITICAL MINERALS COLLABORATIVE

- HEARD

**PREVIOUS COMMITTEE ACTION**

No previous action to record

**WITNESS REGISTER**

LEE ANN MUNK, Director  
Alaska Critical Minerals Collaborative  
Fairbanks, Alaska

**POSITION STATEMENT:** Co-presented Alaska Critical Minerals Collaborative.

LANCE MILLER, Advisory Chair  
Alaska Critical Minerals Collaborative  
Anchorage, Alaska

**POSITION STATEMENT:** Co-presented Alaska Critical Minerals Collaborative.

STEVE MASTERMAN, Deputy Director  
Alaska Critical Minerals Collaborative  
Fairbanks, Alaska

**POSITION STATEMENT:** Co-presented Alaska Critical Minerals Collaborative.

**ACTION NARRATIVE**

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CHAIR GIESSEL called the Senate Resources Standing Committee meeting to order at 3:30 p.m. Present at the call to order were Senators Myers, Kawasaki, Claman, Hughes, Wielechowski Dunbar (via teleconference) and Chair Giessel.

**PRESENTATION(S) : ALASKA CRITICAL MINERALS COLLABORATIVE**

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CHAIR GIESSEL announced the presentation: Alaska Critical Minerals Collaborative.

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LEE ANN MUNK, Director, Alaska Critical Minerals Collaborative, Fairbanks, Alaska, moved to slide 1 and introduced the presentation and her fellow presenters:

[Original punctuation provided.]

**Alaska Critical Minerals  
Collaborative**

LEE ANN MUNK, DIRECTOR  
STEVE MASTERMAN, DEPUTY DIRECTOR  
LANCE MILLER, ADVISORY CHAIR

MS. MUNK said she had been a geologist in the University of Alaska system since 2001, conducting research on critical minerals in Alaska, the Lower 48, and internationally. She expressed enthusiasm about presenting new university initiatives, sharing high-level updates on successes, and outlining the vision and mission for the growing partnership among industry, academia, and government.

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[3:34:02 PM](#)

MS. MUNK moved to and narrated slide 2:

[Original punctuation provided.]

### **Agenda**

- Objective
- UAF Alaska Critical Mineral Collaborative
- Critical Minerals in Alaska
- Industry-Academia-Gov't Coalition
- Timeline of Legislative Actions
- CM Opportunities in Alaska
- Future Support for APMC
- Summary

[3:36:02 PM](#)

LANCE MILLER, Advisory Chair, Alaska Critical Minerals Collaborative, Anchorage, Alaska, said he was the Vice President of Natural Resources for NANA and the Chair of the Alaska Critical Minerals Collaborative (APMC) Advisory Board. He briefly described his background and involvement in advancing Alaska's mineral initiatives. He opined that "critical and strategic minerals" were better understood as "societal minerals".

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MR. MILLER referred to slide 3:

[Original punctuation provided.]

#### Outside Controls We Must Work Within

- Geopolitics and technology changes drive demand
- Metal markets are cyclic (6-10 yrs)
- Capital follows markets

[Slide 3 includes a graph titled: Real commodity price index, metals, 1850 to 2020. Zinc and Copper prices are highlighted on the graph.]

Mr. Miller explained that mineral markets were driven by technology, geopolitics, industrialization, and conflict, with investment typically following price spikes after a lag. He noted that as technology advanced, mineral demand rose sharply, and offered cell phones as an example. He said they contained about 30 elements 20 years ago compared with about 76 today.

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MR. MILLER observed that exploration timelines in Alaska were long, even when capital was more available. He said capital became scarce as major companies reduced long-term research and development (R&D) and shifted exploration to junior firms that competed for investment with other high-growth sectors, such as Bitcoin, tech, biotech, renewables and even marijuana. Combined with changing public perceptions of mining, this created delayed investment, contributing to current shortages in mineral deposits and processing capacity.

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MR. MILLER moved to and narrated slide 4:

[Original punctuation provided.]

#### **Ernst & Young Top 10 Risks to Mining**

Slide 4 includes a graphic illustration of the Top 10 Risks, comparing them for 2024 and 2025:

1. Capital	Up from 2024
2. Environmental Stewardship	Down from 2024
3. Geopolitics	Up from 2024
4. Resource/reserve depletion	New for 2025
5. License to operate	Down from 2024
6. Rising costs and productivity	Same as 2024
7. Climate change	Down from 2024
8. New projects	New for 2025
9. Changing business models	Down from 2024
10. Innovation	Down from 2024

- Capital is a challenge
- Alaska embraces ESG
- AK has geologic potential
- Stable jurisdiction is desired
- New projects
- Long-term plan required
- Industry-Academia-Government coalition will have strength

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MR. MILLER explained that the Alaska Critical Minerals Collaborative (ACMC) intended to address many of the challenges facing the mineral industry. Citing the Ernst & Young study, he

noted that future investment depended on increased innovation and collaboration to make the sector more agile and responsive to changing conditions and to enhance social acceptance of mining. He said ACMC would strengthen Alaska's mineral industry by bringing academia, government, and industry into a coordinated and aligned partnership.

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SENATOR MYERS noted that the Ernst and Young study suggested that environmental stewardship and climate change pressures had decreased between 2024 and 2025. He asked whether that was due to increased pressure to talk about green energy and energy transitions.

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MR. MILLER suggested that the leading industry risks were closely intertwined and difficult to rank definitively. He said the focus on critical minerals and renewables may have increased social acceptance [of mining], but he emphasized that environmental stewardship and maintaining a social license to operate remained essential and closely linked. He noted that environmental stewardship ranked as a top risk [according to the Ernst & Young study].

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MS. MUNK moved to slide 5. She expressed appreciation for the State of Alaska's strong support for the University of Alaska and said recent economic development funding was distributed among UAF, UAA, and UAS, supporting a range of initiatives and research and development activities. She highlighted advances in the use of remote sensing, isotope geochemistry, and new mineral characterization techniques and mentioned that UAF's Institute of Northern Engineering had acquired new instrumentation to enhance research capabilities. She emphasized the importance of improving mineral recovery and extraction, pointing out that federal agencies, such as the Department of Energy, were heavily focused on this part of the supply chain. She explained that research was exploring ways to extract critical minerals from existing ore deposits, including recovering valuable byproduct materials such as bismuth from mines that primarily produce other commodities like gold:

[Original punctuation provided.]

**State of Alaska Funding to UA (\$7.5M):  
High-Level Outcomes Update**

### **Science and Engineering**

- Advancing Mineral Exploration and Discovery
- New Methods of Mineral Characterization
- Enhancing Recovery and Extraction

### **Workforce Development**

- New Technologies in Underground Mine Training
- High School Mine Training, Safety, Operations Programs

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MS. MUNK continued with slide 5. She explained that the Institute of Social and Economic Research at the University of Alaska Anchorage was conducting studies on permitting processes both in the United States and internationally to evaluate how Alaska and the U.S. compared with other jurisdictions. The studies examined permitting timelines and regulatory frameworks, as well as variations in environmental compliance standards. She said the Institute was helping analyze critical mineral markets which are strategically important but often smaller in scale and more volatile:

### **Social and Economic**

- Permitting Process and Timelines
- Environmental Compliance
- CM Metal Markets

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MS. MUNK emphasized the importance of sustainability and supporting the university's broader critical minerals initiatives. She explained that these combined efforts helped inspire the formation of the Alaska Critical Minerals Collaborative (ACMC). She also highlighted additional funding successes, Department of Energy (DOE) funding for two phases of core critical minerals research and a DOE Advanced Research Projects Agency-Energy (ARPA-E) funded project investigating the potential for biomining rare earth elements at Bokan Mountain in Southeast Alaska.

### **Sustainability**

- Formation of ACMC
- Other State and Federal funding
  - DOE CORE-CM (funded)
  - DOE ARP Ae (funded)
  - NSF Engine (pending)

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SENATOR HUGHES expressed support for the APMC model, highlighting the importance of collaboration among government, academia, and industry to strengthen domestic critical mineral development and reduce U.S. dependence on China. She emphasized the potential economic benefits for Alaska alongside responsible stewardship and asked whether other states used similar partnership models.

SENATOR HUGHES sought insight into federal efforts to streamline mine permitting, noting that project timelines can span decades. She referenced comments from U.S. Senator Lisa Murkowski and recent federal signals aimed at expediting permitting processes, and requested clarification on what changes may be forthcoming.

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MS. MUNK said strong examples of industry-academia-government collaboration existed within the United States and internationally. She pointed to institutions such as the Colorado School of Mines, as well as efforts in Montana and South Dakota, where mining, geological sciences, metallurgy, and engineering programs were closely integrated with industry and government partners. She explained that the University of Alaska Fairbanks, through its College of Engineering and Mines and the Geophysical Institute, had many of the same foundational components, though Alaska was earlier in developing a fully integrated model. She said Alaska was collaborating with peer institutions and learning from their frameworks rather than starting from scratch. She emphasized that even stronger models existed in Canada and Australia, which were widely regarded in the minerals industry as effective examples of coordinated problem-solving.

MS. MUNK noted that Alaska was uniquely positioned with 49 of the 50 critical minerals and an active mining community, creating significant potential if collaboration could be further formalized. She highlighted the importance of potential National Science Foundation funding, up to \$160 million over 10 years, as a critical resource to help realize this vision.

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MS. MUNK referenced ongoing research by the Institute of Social and Economic Research (ISER) at the University of Alaska Anchorage, examining permitting timelines and regulatory processes. She noted that permitting reform was a prominent topic at the federal level and confirmed that U.S. Senator Lisa

Murkowski was aware of the lengthy timelines from exploration to production. While the university did not directly participate in permitting decisions, she explained that research efforts aimed to improve public understanding of mineral development and highlighted the essential role of critical minerals, with the broader goal of shaping public perception of mining and supporting informed policy discussions.

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MS. MUNK moved to and narrated slide 6:

[Original punctuation provided.]

### **What is the ACMC?**

The Alaska Critical Minerals Collaborative (ACMC) is a University of Alaska initiative that facilitates research and collaboration across the UA system between industry, government, and other academic partners. SOA funding inspired its formation.

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MS. MUNK moved to and narrated slide 7:

[Original punctuation provided.]

### **Vision and Mission**

#### **Vision**

Be a globally recognized research and educational organization that positions Alaska as a domestic and international leader in the critical minerals space.

#### **Mission**

Advance interdisciplinary critical minerals and materials research, education, technology and partnerships to discover and produce critical mineral resources.

[Slide 7 includes a three-part Venn diagram, illustrating the intended overlap between Industry, Academia and Government, with Critical Mineral (CM) Production placed at the center.]

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STEVE MASTERMAN, Deputy Director, Alaska Critical Minerals Collaborative, Fairbanks, Alaska, introduced himself and noted

that he had retired from the Alaska Department of Natural Resources (DNR) as State Geologist several years earlier and had joined the University of Alaska about a year prior to help form the ACMC. He expressed strong enthusiasm for the initiative.

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MR. MASTERMAN moved to slide 8. He emphasized that Alaska was particularly well endowed in zinc, noting that the Red Dog Mine was the nation's largest zinc mine and largest critical mineral mine. He also highlighted significant resources such as the Graphite One deposit on the Seward Peninsula, and noted Alaska's substantial endowment in copper, nickel, tin, antimony, platinum group metals, chrome, and vanadium:

[Original punctuation provided.]

#### **Critical Minerals in Alaska**

- Most producing mines have an end of life in the next 4 -10 years.
- Alaska depends on minerals for economic prosperity and opportunity.
- 49 of the 50 CMs are in Alaska
- Opportunity for enhanced extraction from existing mines and increased production.
- Source of jobs in rural Alaska.
- Support for local and regional governments.

[Slide 8 includes a map of Alaska illustrating the locations of mines and the minerals they produce: REE + Yttrium, Platinum-Group Elements, Chromium, Cobalt, Tantalum, Niobium, Graphite, Tungsten, Antimony.]

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MR. MASTERMAN identified mine longevity as a looming challenge. He stated that the Fort Knox Mine was scheduled to cease mining in 2027, with milling to continue temporarily through the Mahn Choh operation. The Red Dog Mine was projected to close around 2031, and the Kensington Mine had approximately five years of reserves remaining. He indicated that the Greens Creek Mine and Pogo Mine were in relatively stronger positions, with longer projected mine lives and potential to extend operations through additional resource development. Nonetheless, he stressed that mines are inherently finite.

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MR. MASTERMAN stated that one of ACMC's priorities was to maximize mineral recovery from existing deposits, beginning with currently operating mines. He noted opportunities to improve extraction efficiency, increase profitability, enhance domestic critical mineral production, and potentially produce additional minerals from existing operations that were not currently being recovered.

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MR. MASTERMAN underscored the economic importance of mining in rural Alaska. He cited the role of Red Dog in Northwest Alaska; Pogo and Fort Knox in the Fairbanks region; and Greens Creek and Kensington in Southeast Alaska. He emphasized that mining revenues provide critical financial support to local and regional governments, including the Northwest Arctic Borough, Juneau, Fairbanks, and Delta. He warned that closures, particularly of Red Dog, would significantly impact regional finances. He concluded that mineral development was a key aspect of economic prosperity in rural Alaska and noted that expanding these opportunities was central to the National Science Foundation (NSF) engine proposal the ACMC was developing.

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SENATOR CLAMAN asked whether the Kensington mine was expected to shut down in five years.

[4:05:29 PM](#)

MR. MASTERMAN explained that the question highlighted the inherent uncertainty in projecting mine life. He cited the Greens Creek Mine as an example, noting that when it began operations in 1989 it had an 11-million-ton reserve. By 2025, its reserve had increased to 14 million tons, and it had secured a tailings expansion and operating permit extension through 2043. He observed that based solely on its original reserve, one might have expected the mine to close around 2003. Instead, the operation continually added new reserves, replacing depleted material and maintaining a mine life comparable to when it first opened. He said the Kensington Mine was in a similar position. Although it currently reported roughly a five-year reserve base, ongoing drilling in its vein systems would likely continue to add reserves, provided exploration could stay ahead of active mining. He characterized this as a challenge but indicated that the geological style of the deposit suggested additional tonnage was likely present.

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MR MASTERMAN said the Fort Knox Mine near Fairbanks was a more finite deposit. He explained that it was essentially a single, defined ore body that was unlikely to extend significantly at depth or laterally; once mined out, it would be depleted.

MR. MASTERMAN said the Pogo Mine was likely to remain in operation for decades, like Greens Creek. The Red Dog Mine, he noted, had identified additional resources near its current site, but whether those could be sufficiently drilled, engineered, and permitted before existing reserves were exhausted remained uncertain. He emphasized that reserve figures alone could be misleading. While current estimates might suggest that a mine such as Kensington could close within five years, the geological characteristics of the deposit indicated that it was likely to extend deeper and farther than presently defined, making closure within that timeframe doubtful.

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MR. MASTERMAN moved to slide 9. He said a central principle of ACMC was building a coalition among industry, academia, and government, describing it as a coalition of the willing, the able, and the necessary. He emphasized that each sector contributed essential components: industry identified operational needs and technical challenges; academia developed research-based solutions; and government provided regulatory, financial, and social frameworks. He argued that without the coordinated involvement of all three, the country would be unable to meaningfully address deficiencies in domestic mineral production within a reasonable timeframe.:

[Original punctuation provided.]

### **Industry-Academia-Gov't Coalition**

Federal and State legislatures have momentum around CM and domestic mineral production (e.g. EOs)

Improved and Cutting-Edge Use-Inspired R&D can be a reality for Alaska

Attract additional investment

- Industry-Academia-Gov't coalitions are central to advancing:
  - Exploration and Discovery
  - Extraction
  - Production

- **ACMC will serve as the hub and will help propel Alaska into the mining future**

MR. MASTERMAN explained that by establishing a centralized point of contact, the ACMC had already created a venue for industry to seek assistance and pose technical questions, and he noted that companies were actively engaging with the organization. He described this early engagement as encouraging and aligned with the coalition's intended purpose.

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MR. MASTERMAN moved to slide 10. He reviewed the policy and institutional developments that shaped Alaska's current critical minerals strategy:

[Original punctuation provided.]

### **State and Federal Timeline - [Critical Mineral] CM Progress**

#### **2011/2012**

- CM Summit at UAF

MR. MASTERMAN noted that the UAF summits were held under the direction of then DNR Commissioner, now U.S. Senator, Dan Sullivan. He said those meetings initiated a sequence of state and federal actions.

#### **2017/2018**

- [Executive Order] EO 13187 Fed Strategy CM Supply Chain
- USGS publishes 1st CM list
- \$10M added to USGS for Earth [Mapping Resources Initiative] MRI

MR. MASTERMAN said Alaska significantly benefited from the Earth MRI through expanded geophysical, geochemical, and geological surveys. He added that under President Joe Biden, further executive actions focused on strengthening domestic supply chains and infrastructure.

#### **2020-2022**

- EO 13953 Threat to Domestic Supply
- EO 14017 America's Supply
- Infrastructure, Innovation and Jobs Act

MR. MASTERMAN said the 2022 strategic summit at the University of Alaska reframed critical minerals as a national imperative and from that discussion emerged the concept that ultimately became the Alaska Critical Minerals Collaborative (ACMC).

### **2022-2023**

- Alaska Critical Minerals -A Strategic National Imperative
- \$7.5M to UA for CM R&D from SOA
- DOE publishes list of CM
- DOE funds CORECM Phase 1 at UAF

### **2024**

- SB118 Strategic Plan for Critical and Essential Minerals
- [Department of Energy] DOE [Advanced Research projects agency-Energy] ARP Ae funded at UAF
- UAF launches the Alaska Critical Minerals Collaborative

MR. MASTERMAN observed that during President Trump's second term, additional executive orders focused specifically on Alaska resource development and critical minerals, reinforcing national attention on the issue. He characterized the current moment as a convergence of need, political attention, institutional capacity, and opportunity.

### **2025**

- EO 14156 National Energy Emergency
- EO 14154 Unleashing U.S. Energy
- EO 14153 Unleashing AK Resources
- Immediate Measures to Increase American Mineral Production
- DOE funds CORECM Phase 2 at UAF

### **April 2025**

- UAF submits invited proposal for \$160M to NSF - Alaska Critical Mineral Accelerator with support from Gov Dunleavy Office

MR. MASTERMAN emphasized that the NSF Engine proposal was structured as an economic development initiative rather than purely academic research. Its objective was use-inspired research leading to commercialization, new industries, job creation, and increased mineral production in Alaska. He stated

that the focus was on tangible economic outcomes: business development, employment, and domestic mineral supply rather than research for its own sake.

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MR. MASTERMAN moved to slide 11. He said short term opportunities were at existing mines, where material was already being extracted and processed. He explained that process modifications or mill improvements could enhance recovery rates or enable production of additional minerals. He said University faculty had engaged directly with the companies involved. He noted that potential tellurium output from Pogo could supply roughly one-quarter of current U.S. imports, representing a significant national contribution, even if its direct economic impact on the mine were modest:

[Original punctuation provided.]

### **Opportunities**

1. SHORT TERM  
Red Dog Mine (Zn-Ge)  
Pogo Mine (Bi-Te)  
Greens Creek Mine (Zn)

MR. MASTERMAN said the mid-term opportunities were advancing toward potential production.

2. MID TERM  
Graphite 1 (C)  
Ambler (Cu-Zn)  
Johnson (Cu-Zn)
3. LONG TERM  
Lost River (Sn-F-Li-Ta)  
Bornite (Cu-Co)  
Nikolai (Ni-PGE)  
Palmer (Zn-Ba)

MR. MASTERMAN advocated for support to move forward with all of the opportunities, shortening the timeline to production.

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MS. MUNK moved to slide 12. She explained that the Alaska team was one of 71 selected from 256 preliminary proposals to advance in the National Science Foundation (NSF) "Engines" competition. The Alaska proposal was scheduled for submission within weeks,

and she expressed optimism that it would receive up to \$160 million over ten years, structured in phased increments. She emphasized the importance of a strong coalition of partners to serve as the operational network behind the initiative. She said industry partners had collectively committed more than \$300 million in support, largely in-kind contributions such as access to mine sites, personnel, and operational collaboration, initially focused on the first two years with expectations for continued investment over the life of the program. She emphasized the need to attract additional investment, noting that the Dunleavy administration provided a letter of support and that ACMC would be pursuing financial participation by the state, approximately \$3 million annually over ten years, totaling \$30 million.

[Original punctuation provided.]

#### **Future Support for ACMC**

1. National Science Foundation Engine Opportunity = **\$160M** over 10 years from NSF
2. Engine Partner in kind Contributions = **\$300M** in first 2 years followed by additional \$
3. Alaska State Legislature Sustaining Support = **\$3M/year (\$30M)** planned request beginning FY27

#### **Leveraging State funding by 15x**

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SENATOR HUGHES asked whether \$7.5 million mentioned on a previous slide had already been received. She asked for clarification about the \$160 million NSF funding; whether ACMC was competing for that and whether state matching funds were required.

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MS. MUNK clarified that the previously referenced \$7.5 million was economic development funding appropriated by the State of Alaska and had supported ACMCs work over the past several years.

MS. MUNK explained that funding through the NSF Engines program was highly competitive. Their team had advanced from the preliminary proposal phase, and if successful in the current phase, the process would include two additional phases, including a site visit to Alaska by NSF representatives to evaluate the strength of the statewide system and its development potential. She said there was no formal state

funding match requirement but noted that all ten previously funded Engines projects had received significant state-level support. She acknowledged the realities of legislative processes and funding cycles and said demonstrating that the State of Alaska was supportive and willing to consider financial participation was critically important to the competitiveness of their proposal.

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SENATOR HUGHES asked whether there would be one \$160 million winning entry for the NSF Engine funding or if there would be multiple awards, noting that there were ten previously awarded.

[4:25:11 PM](#)

MS. MUNK explained that solicitations from the NSF typically identified an approximate number of awards but ultimately depended on available funding and the strength of submitted proposals. She said that NSF intended to support multiple projects rather than just one and that NSF was cognizant of entities that had not received funding. She noted that NSF was intentionally focused on investing in regions that had not traditionally benefited from major technology-driven economic growth. She said she believed Alaska was well positioned, given both its geographic status and the national importance of critical minerals. She emphasized that the Alaska critical minerals topic aligned not only with state economic interests but also with broader national priorities, including supply chain resilience and national security.

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SENATOR HUGHES asked about how the legislature could support ACMC in the application process.

[4:26:45 PM](#)

MS. MUNK said the legislature could provide support by providing a letter and she also hoped for sustaining funding moving forward.

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SENATOR HUGHES asked when the application deadline was.

[4:28:05 PM](#)

MS. MUNK said the application would be uploaded April 11, 2025, so a letter by that date would work.

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SENATOR WIELECHOWSKI noted that the state had a \$500 million structural deficit and growing. He said it was unlikely ACMC or anyone would be receiving \$3 million per year.

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CHAIR GIESSEL expressed regret but concurred.

[4:28:59 PM](#)

MS. MUNK acknowledged the state's fiscal constraints and said the goal was to initiate a collaborative discussion about potential next steps. She emphasized that ACMC was pursuing significant external funding and she said the NSF Engines program was an extraordinary opportunity for Alaska.

[4:29:34 PM](#)

CHAIR GIESSEL affirmed ACMCs efforts and said the committee could provide a letter of support.

[4:29:48 PM](#)

MS. MUNK moved to slide 13 and explained that the accelerator proposal followed the structural framework established by the NSF for its Engines program. She emphasized that the program was distinct from a traditional research grant because it required moving discoveries, inventions, and methodologies into real-world industrial application to improve efficiency and accelerate mineral production:

[Original punctuation provided.]

### **NSF Engine: Alaska Critical Mineral Accelerator**

#### **Pillars**

- 1) Use-Inspired R&D
- 2) Talent/Workforce Development
- 3) Translation of Innovation to Practice

#### **Activities**

- 1) Technology Development
- 2) Economic Engagement
- 3) Entrepreneurial Engagement

[slide 13 includes a Venn diagram illustrating the ACMA Engine components and outcomes.]

[4:31:51 PM](#)

MS. MUNK moved to slide 14, an illustration of ACMCs intent to bring together solutions and assets. She said the engine was the

ingenuity of the coalition which would produce outcomes that benefit all Alaskans:

[Original punctuation provided.]

### **NSF Engine: Alaska Critical Mineral Accelerator**

#### **Solutions**

- Use-inspired R&D
- Workforce/talent development
- Commercialization/entrepreneurship
- Governance
- Industry engagement
- Partnerships with established experts

#### **Assets**

- \$300M partner investment
- \$30M State of Alaska investment
- Abundant mineral resources
- Entrepreneurial minerals industry
- Broad regional participation

#### **Barriers**

- Operational remoteness
- Immature R&D capacity
- Lack of capital investment
- Economic hurdles

[Slide 14 graphically illustrates the solutions, assets and barriers as inputs for the Alaska Critical Mineral Accelerator "Engine" to produce the desired outcomes.]

#### **Outcomes**

- Unleashing of Alaska's extraordinary mineral resources
- Establishing leadership in domestic critical mineral mining innovation
- Increasing national security
- Broadening economic prosperity for Alaskans
- Creating a vibrant regional ecosystem
- Enhancing Arctic leadership
- Boosting mineral production

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MS. MUNK moved to slide 15, displaying the names and logos of multiple entities (businesses, government agencies, venture capitalists, start-ups, etc.) partnering with ACMC.

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MS. MUNK moved to slide 16, emphasizing key takeaways. She said ACMC was positioning itself to serve as a long-term hub for critical minerals collaboration. She observed that mining markets operate in cycles and the university provides a stable and continuous institution where stakeholders can consistently engage. She said a coalition among industry, academia, and government was already forming and that strengthening it would require not only financial contributions but also sustained commitment and active participation from all partners. She underscored the importance of shared willingness to collaborate and solve problems collectively.:

[Original punctuation provided.]

#### **Take Aways**

- UA/ACMC is positioned to be the hub for critical minerals innovation in Alaska/U.S./Arctic
- Work together to form a strong industry -academia - government coalition
- Capitalize on the AK and U.S. momentum around critical minerals to increase production in AK
- Ultimately to benefit future generations!

MS. MUNK expressed optimism about leveraging current state and national momentum around critical minerals. She characterized the effort as forward-looking, driven by the goal of creating lasting economic and strategic benefits for future generations.

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MS. MUNK concluded the presentation.

[4:36:14 PM](#)

CHAIR GIESSEL observed that the presentation highlighted the pursuit of NSF Engine funding and ACMC's partnerships, it did not address mineral refining. She noted that germanium produced at the Red Dog Mine was currently refined in Canada and asked what efforts were underway to develop in state refining capacity rather than sending minerals elsewhere for processing.

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MS. MUNK suggested that the proposed NSF Engine could serve as a springboard for developing in-state mineral processing capabilities. She proposed establishing a field pilot initiative in Alaska to test refining or processing methods, such as piloting germanium recovery at an operating mine, rather than sending materials elsewhere for processing. She pointed out that multiple factors would need to align for Alaska to produce and refine its own minerals, emphasizing that industry and government would ultimately make many of the key decisions.

[4:38:09 PM](#)

CHAIR GIESSEL concurred that mineral processing in the state would require social acceptance.

[4:38:17 PM](#)

SENATOR MYERS asked whether it was accurate to say many critical minerals typically occurred as byproducts of mining operations primarily focused on more commercially valuable commodities such as gold or silver.

[4:38:45 PM](#)

MS. MUNK confirmed that many critical minerals occur as byproducts of mining for other primary commodities and described this as the low-hanging fruit for Alaska. She explained that existing operations such as the Red Dog Mine, the Greens Creek Mine, and the Pogo Mine, already contain critical minerals within their ore bodies. She stated that focusing on these existing mines made the most sense because the infrastructure and access were already in place. She suggested that any proposed pilot field study would likely occur at one of these operating mines and could potentially include a small pilot smelter.

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MR. MILLER added that mineral processing and refining were included conceptually in the ACMC NSF Engine proposal but said specific plans for a refinery or smelter were still being discussed. He confirmed that many critical minerals are produced as byproducts, using germanium at the Red Dog Mine as an example, noting that it would not be mined independently because the economics depend on the primary zinc operation. He stated that NANA had been approached by the U.S. Department of Defense about increasing germanium recovery and explained that specialized recovery facilities, such as the germanium-indium plant at the smelter in Trail, British Columbia, demonstrate how byproduct extraction can occur within the smelting process. However, he noted that most smelters worldwide do not recover

germanium from zinc ores. He emphasized that mineral processing represents a broader challenge for the United States, which he described as lagging behind China due to China's long-term strategic investments in refining capacity. At the same time, he explained that the global market currently has excess smelting capacity, which drives down treatment charges and reduces incentives to build new facilities. Because of these market conditions, he suggested that constructing a new smelter in Alaska would likely require significant government subsidies, as industry alone would not find it economically viable. He concluded that these economic realities are part of the broader issues the Alaska Critical Minerals Collaborative (ACMA) was examining.

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SENATOR KAWASAKI reflected on Alaska's role as a resource state that often exports raw materials to be processed elsewhere. He noted that the state once had four refineries and previously converted refined fuel in Kenai into fertilizer used locally but explained that various factors had made such in-state processing difficult. He asked whether exporting minerals for refining, such as gold from the Kensington Mine being processed in Canada and partially sent to China, had led to any negative consequences related to tariffs or international relations. He mentioned that zinc from a mine near Kotzebue is partly owned by a Chinese corporation and questioned whether similar issues had arisen in that context.

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MR. MILLER clarified that there was no Chinese ownership of the Red Dog Mine, though some of its zinc concentrate was exported to China. He explained that the impact of tariffs on zinc markets remained uncertain. He noted speculation that arrangements might be made with trading partners, particularly involving the smelter in Trail, B.C., to ensure the United States received the zinc it needed. He added that the situation had created significant concern within the industry and that some longer-term market projections suggested zinc prices could trend downward until meaningful resource depletion occurs, which might be about five years away.

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CHAIR GIESSEL said she was informed a few years ago that China was banning the export of germanium and gallium, both things the U.S. needs.

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SENATOR CLAMAN noted the conclusion that there was no interest in the industry to build a smelter. He asked whether there might be interest in the future and what the timeframe for that might be.

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MR. MILLER opined that it would be ten or twenty years at least. He clarified that when he spoke of government support for mineral processing he did not mean to suggest support from the state of Alaska, but from the federal government, such as during the cold war and other times when the U.S. subsidized projects in Alaska for national security.

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SENATOR HUGHES wished Alaska Critical Minerals Collaborative (ACMC) success with its funding application and thanked the committee chair for supporting a letter of endorsement. She reflected on Alaska's historical gold rush and expressed hope for a new surge in mineral development driven by emerging opportunities. She said securing the funding could open significant doors for Alaska, creating strong jobs while allowing the state to responsibly contribute critical resources to the nation and the world.

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CHAIR GIESSEL concurred.

[4:50:12 PM](#)

There being no further business to come before the committee, Chair Giessel adjourned the Senate Resources Standing Committee meeting at 4:50 p.m.