

YES TO AI DATA CENTERS... BUT WE MUST PLANT HEMP AROUND THEM

A Research-Based Policy Framework for Alaska

Prepared for: Alaska State Legislators

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The Opportunity and the Challenge

AI data centers represent critical infrastructure for Alaska's digital economy, powering healthcare, education, logistics, and public safety. However, national and international studies confirm that large data centers concentrate environmental risks: massive electricity demand, water-intensive cooling systems, and industrial activity that can degrade soil and ecosystems if not carefully managed^{[1][2][3]}.

Alaska has a unique opportunity to lead the nation in regenerative infrastructure—where hosting the digital economy also restores land, improves local health, and creates new plant-based industries.

The Science: Hemp as a Proven Environmental Solution

Industrial hemp (*Cannabis sativa* L.) is documented in peer-reviewed research as a high-biomass, deep-rooted crop with exceptional potential for **phytoremediation**—using plants to clean contaminated soil and water^{[4][5][6][7][8]}.

Phytoremediation Capabilities

Hemp can tolerate and accumulate heavy metals (lead, cadmium, nickel, zinc, copper) from soil, removing pollutants while producing fiber suitable for industrial uses like composites and insulation^{[4][5][6][7][8][9]}. Reviews conclude that hemp is particularly suited for remediation belts around industrial facilities due to rapid growth, large root systems, and compatibility with soil amendments like biochar^{[6][8][9]}.

Simultaneous benefits of hemp buffer zones:

- Capture and stabilize pollutants in disturbed or contaminated soils

- Reduce erosion and dust
- Sequester carbon in biomass and soils
- Provide feedstock for low-carbon building materials and bioproducts[4][5][6][8][9][10]
- Moderate local heat through shade and evapotranspiration-driven cooling around paved data center sites[21][22][23][24]

Carbon Sequestration and Climate Benefits

Industrial hemp is recognized as a powerful carbon-sequestering crop. Multiple studies indicate that one hectare of hemp can absorb roughly 8–22 tons of CO₂ per growing season—often equal to or greater than the annual uptake of a young forest—while also building soil organic carbon and improving soil health[25][26][27][28][29][30][31]. When harvested hemp from buffer zones is directed into durable products such as building materials or biochar, a significant share of this carbon remains locked away for long periods, turning required "green buffers" around AI data centers into a measurable, reportable climate-mitigation asset for Alaska[25][27][32][28][33][31].

Energy Innovation Potential

Beyond soil remediation, hemp offers cutting-edge clean-energy applications:

Hemp-derived carbon for energy storage: Researchers have converted hemp bast fiber into partially graphitic carbon nanosheets with extremely high surface area and conductivity, producing supercapacitor electrodes whose power and energy densities exceed many commercial devices at a fraction of the cost of graphene[11][12][13][14][15]. This positions hemp as a strategic precursor for advanced energy-storage components that could support data-center microgrids, backup systems, and grid-stabilizing infrastructure.

Hemp as bioenergy feedstock: Industrial hemp produces high biomass yields convertible to biodiesel from seed oil and bioethanol, biogas, and solid biofuels from stalk and whole-plant biomass, with energy yields competitive with other dedicated energy crops[16][17][18][19][20]. A University of Connecticut study demonstrated hemp oil can be efficiently converted to biodiesel ($\approx 97\%$ conversion) that meets fuel standards and performs well at low temperatures[17][18].

Policy Proposal: AI Data Center Green Buffer and Phytoremediation Pilot Program

We propose a **state-level pilot program** with four core goals:

1. **Mandate or incentivize** AI data center developers in Alaska to establish industrial hemp phytoremediation belts and green buffers around new and expanding facilities, in collaboration with local growers and Indigenous partners.
2. **Fund applied research** in partnership with Alaska universities and local nonprofits to measure hemp buffer performance under Alaska conditions—tracking

soil metals, hydrocarbons, carbon sequestration, biodiversity, and air quality benefits over multiple seasons[4][6][8][9].

3. **Explore integrated value chains** where harvested hemp from buffers is safely processed into non-food industrial products (building materials, erosion-control products, insulation, biofuels, energy storage materials), multiplying economic benefits while respecting contamination limits and worker safety[4][5][10][16][17][18][19][20].
 4. **Develop evidence-based siting guidelines** so that "Yes to AI data centers" in Alaska always comes with measurable, science-based environmental mitigation and local economic opportunity.
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Why This Matters for Alaska

- **Environmental leadership:** Alaska becomes the first state to couple AI infrastructure with mandatory regenerative buffers.
 - **Economic development:** Creates hemp cultivation, processing, and advanced materials jobs in rural and Indigenous communities.
 - **Innovation ecosystem:** Positions Alaska as a hub for hemp-based energy storage and biofuel research.
 - **Community health:** Protects soil, water, and air quality in data center host communities.
 - **Climate action:** Sequesters carbon and reduces data center energy footprint through local biofuel integration.
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Legislative Ask

We respectfully request Alaska legislators to support:

- **Pilot program funding** for hemp phytoremediation research around existing or planned data centers
 - **Regulatory framework** requiring or incentivizing hemp buffer zones as part of data center permits
 - **Partnership authorization** enabling collaboration between data center developers, Alaska universities, Sacred Seeds Foundation, and Indigenous corporations
 - **Workforce development** funding for hemp cultivation, processing, and advanced materials training programs
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Conclusion

"Yes to AI data centers... but we must plant hemp all around them" is not an obstacle to development—it is a pathway to regenerative infrastructure that protects Alaska's

environment, creates jobs, and positions our state as a national leader in sustainable innovation.

Let's ensure Alaska's digital future is also green, resilient, and economically inclusive.

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