

YES TO AI DATA CENTERS IN MAT-SU... BUT WE MUST PLANT HEMP AROUND THEM

A Research-Based Policy Framework for the Matanuska-Susitna Borough

Prepared for: Mat-Su Borough Assembly & Alaska State Legislators

Submitted by: Sara Williams, President, Sacred Seeds Foundation

Date: March 13, 2026

The Opportunity and the Local Challenge

The Matanuska-Susitna Borough is being actively considered for large AI and data center development, including proposals tied to Terra Energy Center and borough-owned industrial lands near Port MacKenzie, Big Lake, and the future West Susitna corridor^{[1][2][3]}. Residents and leaders are rightly focused on jobs and investment—but also on the impacts: very high electricity demand, potential coal-linked power generation, heavy water use for cooling, and industrial activity near salmon streams and sensitive habitats^{[1][2][4]}.

Mat-Su has a chance to set a national precedent: **if we say yes to AI and data centers, we should also require visible, science-based environmental safeguards that restore land and create new local industries.**

The Science: Industrial Hemp as Living Infrastructure

Industrial hemp (*Cannabis sativa* L.) is documented in peer-reviewed research as a high-biomass, deep-rooted crop with strong potential for **phytoremediation**—using plants to clean contaminated soils—while also delivering carbon sequestration and biomass for clean-energy innovation^{[5][6][7][8][9]}.

Phytoremediation and Soil Health

Hemp can tolerate and accumulate heavy metals such as lead, cadmium, nickel, zinc, and copper from contaminated or disturbed soils, stabilizing pollutants in the root zone and plant tissue while producing fiber suitable for non-food industrial uses (insulation, composites, erosion-control products)^{[5][6][7][8][9][10]}. Reviews highlight hemp as particularly suited for "remediation belts" around industrial facilities because it grows quickly, has extensive

roots, and works well with soil amendments like biochar to boost contaminant uptake and soil carbon[7][9][10].

Benefits of hemp buffer zones around Mat-Su data centers:

- Capture and stabilize pollutants in disturbed or compacted soils
- Reduce erosion, dust, and runoff around roads, pads, and utility corridors
- Sequester carbon in both plant biomass and improved soils
- Provide feedstock for low-carbon building materials and other bioproducts

Energy Innovation, Carbon, and Cooling

Hemp-Based Energy and Materials

Advanced energy storage materials: Laboratory research shows hemp bast fiber can be converted into partially graphitic carbon nanosheets with high surface area and conductivity, suitable for high-performance supercapacitors—offering a lower-cost alternative to traditional graphene precursors[11][12][13][14][15]. These hemp-derived carbons could support future microgrids and backup systems that make data center power cleaner and more resilient.

Bioenergy feedstock: Industrial hemp produces substantial biomass that can be processed into biodiesel from seed oil, as well as bioethanol, biogas, and solid biofuels from stalks and whole-plant material[16][17][18][19][20]. This positions hemp as a promising feedstock for local, low-carbon energy projects that could complement data center demand. A University of Connecticut study demonstrated hemp oil can be efficiently converted to biodiesel (approximately 97% conversion) that meets fuel standards and performs well at low temperatures[17][18].

Carbon Sequestration and Local Heat Reduction

Carbon capture: Studies and policy analyses indicate that a hectare of hemp can absorb on the order of 8-22 tons of CO₂ per growing season, comparable to or greater than many forests on an annual basis, while also building soil organic carbon when managed well[21][22][23][24][25][26][27]. When stalks are directed into durable products or biochar, a large share of this carbon is stored for years to decades[21][23][28][24][29][27].

Local cooling: Dense vegetated buffers like hemp belts provide shade and evapotranspiration, which can help moderate ground-level temperatures and reduce heat buildup around large paved and built areas[30][31][32][33]. In Mat-Su's climate, designed hemp buffer zones can function as green infrastructure: cooling edges of industrial sites, reducing dust, and softening the visual impact of large facilities.

Mat-Su Policy Proposal: Hemp Buffer and Phytoremediation Pilot Around Data Centers

We propose a **Mat-Su-focused pilot and policy framework** with four core goals:

1. **Require or strongly incentivize** industrial hemp phytoremediation belts and green buffer zones around any new or expanded AI/data center or similar high-power industrial facility on borough-owned land (e.g., Port MacKenzie industrial areas, Big Lake/West Susitna corridors), in collaboration with local growers and Indigenous partners.
2. **Fund applied research** with Alaska universities, local nonprofits, and Tribal/Indigenous organizations to measure hemp buffer performance under Mat-Su conditions—tracking soil contaminants, soil carbon, water quality, biodiversity, air quality, and local microclimate changes over multiple seasons[5][7][9][10].
3. **Develop value chains** that safely convert buffer hemp into non-food industrial products such as building materials, erosion-control products, insulation, biofuels, and advanced carbon materials for energy storage—creating Mat-Su jobs in cultivation, processing, and manufacturing[5][6][11][16][17][18][19][20].
4. **Integrate hemp buffers into siting and permitting guidelines** so that any borough or state support for data center projects (including those linked to Terra Energy Center or future Port MacKenzie developments) is conditioned on measurable, science-based environmental mitigation and local economic benefit through hemp[1][2][3].

Why This Matters for the Mat-Su Borough

- **Protects Port MacKenzie and West Susitna landscapes** as industrial development expands
- **Anchors jobs locally** in farming, processing, and advanced materials—not only in server halls
- **Builds a new Mat-Su industry** around hemp-based building materials, bioenergy, and energy storage
- **Improves community trust** by making environmental safeguards visible and measurable
- **Positions Mat-Su as a national leader** in pairing AI infrastructure with regenerative land use

Call to Action

We ask Mat-Su Assembly members and Alaska legislators to:

- Support a Mat-Su pilot requiring hemp buffer zones and phytoremediation belts around any borough-supported data center or similar high-power industrial project

- Direct staff to work with Sacred Seeds Foundation, local farmers, and university partners to design pilot plots and monitoring plans at priority sites such as Port MacKenzie industrial lands
- Champion state-level legislation that lets Mat-Su's model become the template for responsible AI/data center development across Alaska

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Contact Information

Sara Williams

President and Founder, Sacred Seeds Foundation

Email: sacredseedsusa@gmail.com

Phone: 907-887-6130

Web: SacredSeedsAK.org

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