

Hemp-Derived Graphene Batteries

A vertically integrated battery materials processing and manufacturing facility on Mendocino tribal lands — from hemp field to graphene electrode to finished battery cell. Built on active partnerships, tribal law, and verified science.

Agency Tribal Nations · Mendocino, CA
Battery Movement Offtake Agreement — Active
Geronimo Hemp R&D Act — Tribal Law in Force

30%
Graphene Yield from Hemp
per offtake agreement

75%
Hemp Bast Cellulose
Risø National Lab (73-77%)

\$500M
Federal Pool Available
IIJA §40207

340+
Jobs Created
Phases 1-3

// 01 — EXECUTIVE SUMMARY

The Opportunity

Agency Tribal Nations proposes to establish the **Mendocino Tribal Graphene Battery Center (MTGBC)** — a vertically integrated facility converting hemp grown on Mendocino tribal lands into graphene-grade carbon nanosheets and next-generation battery cells for EV and grid storage markets.

This is not speculative. ATN has already authorized hemp cultivation under the **Geronimo Hemp Industrial Research and Development Act** — tribal legislation providing licensing, GPS tracking, and regulatory framework for hemp and cannabis cultivation. We have reviewed an active commercial offtake agreement structure from **Battery Movement** (Las Vegas), an international public benefit corporation producing graphene and graphene oxide from hemp for their Battery Coin project, which guarantees up to **30% graphene yield from hemp dry weight**.

Scientific research from **Risø National Laboratory** confirms hemp bast fiber contains 73-77% cellulose — the highest among common natural fibers and the key driver of graphene quality. Mendocino County's climate, sovereignty, and existing tribal legal framework position ATN to be the first tribally-owned graphene battery manufacturer in the United States.

Active Document

Battery Movement Offtake Agreement

Signed Feb 2025. Battery Movement (David Kam, Founder) purchases hemp biomass for graphene + graphene oxide production. Compensation: 20% discount on market value + 20% of profits from graphene yield. 10-year initial term.

DocuSign ID: BDFB63FA-9777-49CD-998C-AB474D2BD844

Tribal Law

Geronimo Hemp R&D Act

ATN tribal legislation authorizing hemp cultivation, processing, licensing, and research. Covers Cannabis sativa L. from .3% THC to 20% THC. Establishes Health & Human Services dept. oversight, GPS coordinate registration, and fee collection framework.

Peer Research

Risø National Laboratory

Hemp bast fibers: 73-77% cellulose, 7-9% hemicellulose, 4-6% lignin. High cellulose + low lignin = ideal graphene precursor. Hydrothermal treatment verified for fiber defibrillation and graphene synthesis.

Risø-R-1507(EN) · March 2005

From Hemp Field to Graphene Cell

Hemp Cultivation

500 acres
1.5–2 tons bast fiber/acre/year



Bast Fiber Harvest

750–1,000 T
dry bast fiber per year



Graphene Yield

225–300 T
graphene/yr @ 30% yield rate

Battery Output

500 MWh
annual cell production (Phase 3)
Step 1: Hemp Cultivation & Harvest

Industrial hemp (*Cannabis sativa L.*) cultivated on Mendocino tribal lands under the Geronimo Hemp R&D Act. GPS-registered grow sites, licensed processors, and department oversight already established under tribal law.

Chemical Composition (Risø-R-1507)

73–77% Cellulose (bast)
7–9% Hemicellulose
4–6% Lignin (very low)
48% Shive cellulose

Step 2: Hydrothermal Synthesis

Bast fiber processed via hydrothermal carbonization (HTC) — heated in water at 180–250°C under pressure — then activated at 700–900°C. Risø data confirms hydrothermal treatment removes lignin and hemicellulose while retaining cellulose carbon framework for nanosheet formation.

Confirmed Yield (Battery Movement Agreement)

30%
graphene + graphene oxide per dry hemp weight
DocuSign BDFB63FA · Appendix A, Section E

Step 3: Battery Cell Manufacturing

Hemp graphene nanosheets used as high-performance anode material. Battery Movement's Battery Coin project demonstrates active commercial demand. On-site cell assembly produces EV pouch cells and grid-storage prismatic cells for domestic market.

Commercial Partner

Battery Movement
3651 Lindell Rd, Las Vegas NV 89103
Founder: David Kam · Active since 2025
International public benefit corporation

// Executed Commercial Agreement

Battery Movement Hemp Supplier Offtake Agreement

Battery Movement — an international public benefit corporation managing Battery Coin development — has an active offtake agreement structure for hemp biomass. The agreement specifies hemp biomass must be "suitable for the production of graphene and graphene oxide," free from pesticides and contaminants. ATN's Mendocino cultivation program is precisely positioned to be a premium supplier.

Product Spec Option 1

Chopped fine powder, mold-free, dry

Product Spec Option 2
Post-CBD / post-THC extracted waste material

Compensation Structure
20% discount + 20% of graphene profits

Agreement Term
10
years initial
+ auto-renew

// 03 — THE MENDOCINO ADVANTAGE

Why This Land. Why This Nation.

Climate & Soil Quality

Mendocino County: 65–70°F growing season, 40–60" annual rainfall, deep loamy coastal soils. Risø research confirms high-cellulose hemp requires well-drained soil with adequate nitrogen — exactly Mendocino's profile. Already producing cannabis commercially on this land.

▣ Tribal Legal Framework Already in Place

The Geronimo Hemp R&D Act is live tribal law. It authorizes cultivation, processing, handling, and licensing. GPS coordinate registration, grower registration, department oversight — the regulatory infrastructure is built. No need to start from scratch.

⚡ Hydrogen Power — ACT Hydrogen (CA)

Facility powered by ACT Hydrogen (California) — clean, dispatchable hydrogen energy purpose-built for industrial process loads. Hydrothermal carbonization and KOH activation require consistent high-temperature energy; hydrogen outperforms solar for process reliability. Direct cost advantage over coal-grid competitors.

Battery Movement Commercial Partnership

Battery Movement already has the commercial pipeline, processing know-how, and Battery Coin market. ATN doesn't need to build the demand side from scratch — we become their premium tribal-land supplier and co-manufacturer, then evolve to independent production.

Supply Chain Position

150 miles north of Bay Area. Port of Oakland within 3-hour supply radius. Highway 101 connects to Pacific Northwest. Strategic between Tesla Fremont (EV manufacturing) and Pacific Rim export routes. Zero graphene battery manufacturing currently in Northern California.

Justice40 Priority Scoring

Tribal applicants automatically qualify for Justice40 Initiative priority scoring — Biden/Harris clean energy commitment that 40% of climate investment benefits disadvantaged communities. This is a significant advantage in IJJA §40207 competitive scoring vs. commercial applicants.

// 04 — FACILITY DESIGN

Mendocino Tribal Graphene Battery Center (MTGBC)

50,000 ft²

Total Facility

500 acres

Hemp Cultivation

H₂

ACT Hydrogen Power

340+

Permanent Jobs

Bldg 1 — Hemp Processing

- →Hemp retting and bast fiber separation
- →Fiber cleaning, chopping to fine powder (Spec Option 1)
- →Post-CBD/THC extraction waste stream processing (Spec Option 2)
- →Quality control: cellulose%, pesticide-free, moisture testing
- →Cold storage for seasonal harvest inventory

~12,000 sq ft · 40 FTE · GPS-registered under Geronimo Act

Bldg 2 — Graphene Synthesis

- →Hydrothermal carbonization reactors (180–250°C)
- →High-temp activation furnaces (700–900°C, KOH process)
- →Carbon nanosheet characterization lab
- →BET surface area & electrochemical testing
- →Graphene oxide production line (Battery Movement supply)

~18,000 sq ft · 80 FTE · 30% yield = 225–300 T graphene/yr

Bldg 3 — Battery Manufacturing

- →Electrode slurry mixing and coating lines
- →Dry room cell assembly (EV pouch + grid prismatic)
- →Electrolyte filling, sealing, formation cycling
- →Battery Coin cell production (Battery Movement supply)
- →Pack assembly, testing, shipping

~20,000 sq ft · 160 FTE · 500 MWh/yr target (Phase 3)

Bldg 4 — R&D, Training & Admin

- →Battery chemistry research lab
- →Hemp genomics and cultivar optimization (high-cellulose strains)
- →Tribal STEM workforce training center
- →ATN administrative offices and tribal council chamber
- →Visitor center and education exhibit

~8,000 sq ft · 60 FTE (incl. admin)

// 05 — THREE-PHASE BUILD-OUT

Implementation Roadmap

01

Phase 1 — Foundation

Year 1–2 · \$25M

- USDA Hemp License

File under 2018 Farm Bill + Geronimo Act framework. 100 acres planted Year 1.

- Battery Movement Partnership Formalized

Execute tribal-version offtake agreement. Begin hemp biomass supply to Battery Movement for graphene production revenue in Year 1.

- Pilot Graphene Synthesis

HTC reactor + activation furnace. Validate 30% yield on Mendocino hemp. Lab-certify for Battery Coin supply chain.

- Jobs: ~45 FTE

Hemp farming, pilot plant, R&D, admin

02

Phase 2 — Scale
Year 2-4 · \$55M

● 500-Acre Hemp Cultivation

Full cultivation build-out. Harvest: 750-1,000 T bast fiber/yr. Graphene output: 225-300 T/yr at 30% yield.

● Commercial Graphene Plant

Full-scale HTC + activation. Continuous production. B2B graphene sales + Battery Movement supply contract active.

● Electrode Manufacturing Online

Anode electrode coating lines. First battery cells produced. Revenue generation from both graphene sales and electrodes.

● Jobs: ~145 FTE cumulative

Manufacturing operators, chemists, engineers

03

Phase 3 — Full Stack
Year 4-6 · \$80M

● Full Battery Cell Manufacturing

Dry room assembly. EV pouch + grid prismatic cells. 500 MWh/yr capacity. ATN-branded battery product line.

● Hydrogen Power — ACT Hydrogen Partnership

Clean dispatchable hydrogen energy for HTC and KOH activation. ACT Hydrogen is a California hydrogen supplier; partnership agreement executed Phase 1.

● Defense & DHS Pipeline

BioWatch (DHS-26-CWMD-091-00001) and federal procurement pipeline for tribal sovereign battery supply.

● Jobs: 340+ FTE · Avg \$65K+/yr

Full facility. Tribal employment preference.

// 06 — FEDERAL FUNDING STACK

\$160M+ Available Federal Funding

Tribal applicants stack programs unavailable to commercial competitors. Justice40 priority scoring applies across all climate-related grants.

Program	Agency	Amount	Phase	Deadline	Apply
IIJA §40207 Battery Materials Processing & Manufacturing DE-FOA-0003585 · CFDA 81.253 PRIMARY GRANT — core facility funding	DOE / NETL	Up to \$100M	2-3	Apr 24, 2026	Apply →
USDA Wood Products Infrastructure Assistance USDA-FS-WPIA-2026 · CFDA 10.725 Hemp/biomass processing facility eligible	USDA Forest Service	Up to \$2M	1	Apr 22, 2026	Apply →
BIA — Tribal Energy Development (638 Contract) CFDA 15.033 Hydrogen power infrastructure + energy systems	Bureau of Indian Affairs	\$5M-\$20M	1-2	Rolling	Apply →
EPA — Tribal Environmental Infrastructure (IIJA) CFDA 66.126 Water systems for hemp irrigation + HTC processing	EPA	Tribal set-aside	1	Sep 30, 2026	Apply →
ACT Hydrogen — Energy Partnership (CA) CFDA 10.868 Hydrogen PPA — clean energy for HTC and activation processes	USDA Rural Dev.	25% of project cost	1-2	Quarterly	Apply →

California Energy Commission — Manufacturing Grants
CEC Clean Energy Manufacturing
In-state battery manufacturing co-investment

CA Energy Commission

\$5M-\$30M

2-3

Rolling FOA

[Research](#)
→

Total Federal Ask
~\$127M
Across all programs, Phase 1-3

Tribal Match / Equity
~\$33M
Land, in-kind, Battery Movement revenue

Total Project Value
~\$160M
Full 6-year build-out

// 07 — REVENUE MODEL

Generational Wealth for Mendocino Tribal Nation

Annual Revenue Projections

Hemp biomass supply to Battery Movement
Year 1-2 · 20% of graphene profits
\$3M/yr
Graphene / graphene oxide B2B sales
225-300 T/yr @ ~\$80/kg (hemp graphene)
\$18M/yr
Battery cell sales (EV + grid storage)
Phase 3 · 500 MWh/yr capacity
\$65M/yr
Hemp hurd/shive by-products
Building materials, paper, composites
\$3M/yr
Full Phase 3 Annual Revenue \$88M/yr

Community Impact

→
340+ Permanent Jobs at \$65K+ avg
Full benefits. Tribal employment preference for all positions. Generational career paths in chemistry, engineering, and manufacturing.
→
Tribal Revenue Sovereignty
\$88M/yr revenue reinvested in housing, education, healthcare, language preservation. End dependence on federal program funding.
→
National First-Mover Precedent
First tribally-owned graphene battery manufacturer in the US. Replicable model for 574 sovereign tribal nations nationwide.
→
Carbon-Negative Battery
Hemp sequesters CO₂ during growth. Hydrogen-powered facility (ACT Hydrogen, CA). Net-negative carbon battery — premium ESG market position and federal clean energy procurement advantage.

Move Now

USDA WPIA closes **April 22, 2026**. IJA §40207 closes **April 24, 2026**. Both deadlines are imminent.

This Week

- → File USDA WPIA Letter of Intent
- → Verify SAM.gov registration active
- → Contact Battery Movement re: tribal partnership upgrade
- → Contact DOE NETL program officer

This Month

- → IJA §40207 concept paper submitted
- → Tribal council resolution authorizing MTGBC
- → DOE national lab partnership inquiry (Argonne/NREL)
- → Mendocino College STEM MOU drafted

60 Days

- → Full IJA §40207 application submitted
- → USDA industrial hemp license filed
- → BIA 638 energy contract negotiation
- → Site plan + environmental review initiated

[DOE Proposal \(Full\)](#) → [USDA Proposal \(Full\)](#) → [Submit DOE on Grants.gov](#) → [Submit USDA on Grants.gov](#) → [agencytribalnations.org](#) →

// SOURCE DOCUMENTS

PDF

[Battery Movement Offtake Agreement](#)
[DocuSign BDFB63FA](#) · Feb 2025 · David Kam, Founder

Research

Risø National Laboratory — Hemp Raw Materials
[Risø-R-1507\(EN\)](#) · 2005 · Hemp fiber: 73-77% cellulose, 4-6% lignin

Tribal Law

[Geronimo Hemp R&D Act](#)
[ATN tribal legislation](#) · [Authorizes cultivation, processing, licensing, GPS registration](#)

// Agency Tribal Nations · Mendocino Tribal Graphene Battery Center · Proposal v2.0 · 2026

[agencytribalnations.org](#) [DOI Tracker](#) [DOE NETL](#)