Executive Summary: Ohio – AISF (American Innovation & Sustainability Fund)

Overview

The **Ohio initiative** within the **AISF Master Plan** focuses on **resource extraction** from **shale brines** and **coal waste**, coupled with the deployment of **AI-driven healthcare solutions** (Invisa.ai™). This dual-purpose project seeks to **extract critical minerals** (lithium, REEs) from **Utica Shale** brine and **coal ash**, while simultaneously **advancing AI-powered orthotics** to improve gait, balance, and quality of life for large healthcare populations, including **pediatric** and **elderly** groups. By addressing **Ohio's natural resources** and **healthcare needs**, the project will **strengthen U.S. supply chains**, **improve public health**, and **generate economic growth** statewide.

Key Objectives

- **Shale Brine & Coal Waste Extraction**
  - **Recover lithium (20–30 tons annually)** from **Utica Shale** brines and **100–150 tons** of **rare earth elements (REEs)** from coal waste.
  - Provide vital minerals for **electric vehicle batteries**, **renewable energy** (wind turbines), and **defense technologies**.
- **AI-Driven Orthotics Access**
  - Scale **Invisa.ai™** orthotic solutions (Invisabrace®, InvisaSole®) to serve **major medical centers** like **Cleveland Clinic** and **Nationwide Children's Hospital**.
  - Improve **mobility** for populations with **cerebral palsy**, **diabetes**, and **other impairments**, reducing healthcare costs and enhancing patient outcomes.
- **Economic & Environmental Impact**
  - Reduce **reliance on foreign sources** of critical minerals while **remediating coal waste** and **shale brine** contamination.
  - Create **high-value jobs** in minerals extraction and **AI healthcare tech**; improve **health equity** by providing **AI-driven orthotics** to underserved communities.

Phases

Phase 1 (0–12 months)

- **Shale Brine & Coal Waste Assessment**
  - Conduct **feasibility studies** on **Utica Shale** brines and **coal ash** deposits to identify **mineral content**.
  - Collaborate with **Ohio State University** and **local energy companies** for extraction trials.
- **AI Orthotics Development**
  - Launch pilot clinical trials with **Cleveland Clinic** and **Nationwide Children's Hospital**, testing Invisa.ai™ solutions on **500–1,000 patients**.
  - Focus on **diabetic foot care** and **pediatric mobility issues**.
- **Partnership Formalization**
  - Finalize MOUs with **Ohio State University**, **Cleveland Clinic**, and local **energy producers**.
  - Secure **$5–10M** in funding to pilot orthotics and mineral extraction.

Phase 2 (12–24 months)

- **Shale Brine & Coal Waste Extraction Facility**
  - Establish a **modular facility** to process **50,000–100,000 gallons** of shale brine per day, recovering **100–150 tons** of lithium annually.
  - Begin **coal waste processing** for REEs, targeting **50 tons** annually.
- **Orthotics Rollout**
  - Scale Invisa.ai™ to **additional healthcare facilities**, focusing on **elderly mobility** and **fall prevention**.
  - Distribute **2,000–5,000 devices** to **rehabilitation centers**, **senior living facilities**, and **diabetic care clinics**.
- **Revenue Generation**
  - **$5–7M** annually from lithium/REE sales, **$2–3M** from orthotic device sales.
  - Strengthen local supply chains and **healthcare networks**.

Phase 3 (24–36+ months)

- **Full-Scale Extraction Facility**
  - Expand to process **500,000 gallons** of shale brine daily and **10,000 tons** of coal waste annually.
  - Produce **300–400 tons** of lithium and **100–150 tons** of REEs yearly, vital for **EV**, **battery**, and **renewable** sectors.
- **National Orthotics Deployment**
  - Scale Invisa.ai™ to serve **10,000+ patients** across Ohio, expanding to neighboring states.
  - Focus on high-need populations (diabetic patients, seniors) at risk for **mobility impairments**.
- **Revenue Projections**

- By **Year 5**, **$50–75M** from lithium & REE sales, **$30–40M** from orthotics.

Impact

1. **Environmental Impact**
   - Process **100,000 gallons** of shale brine/day and **10,000 tons** of coal waste/year, reducing contamination and recovering **critical minerals**.
   - Enhance **ecosystem health** by treating **toxic** brine and coal ash.
2. **Economic Impact**
   - **400–500 direct jobs** in minerals extraction and AI healthcare; **1,500–2,000 indirect jobs** in logistics, research, and services.
   - **$100M+** annual economic impact by **Year 5**, bridging Ohio's mining heritage with future-oriented industries.
3. **National Security & Supply Chain Resilience**
   - **Domestic lithium and REE production** reduces U.S. dependence on foreign suppliers, aiding **EV**, **wind**, and **defense**.
   - **Invisa.ai™** orthotics improve **public health**, reduce long-term healthcare expenses, and support **aging** populations.

Financial Projections

Capital Investment & Revenue Timeline

Phase	Timeline	Capital Investment	Key Revenue Drivers	Projected Annual Revenue
Phase 1	0–12 months	~$5–10M	Pilot extraction (shale brine/coal waste) + orthotics trials	Minimal (R&D, clinical validation)
Phase 2	12–24 months	~$10–15M (cumulative)	Modular facility (50k–100k gallons/day) + orthotics expansion	$5–7M (lithium/REE) + $2–3M (orthotics)
Phase 3	24–36+ months	~$30–40M (cumulative)	Full-scale extraction (300–400 tons lithium/yr, 100–150 REEs) & national orthotics deployment	$50–75M (REE) + $30–40M (orthotics) by Year 5

5-Year Financial Outlook

- **Year 1**
  - **Investment**: ~$5–10M for pilot extraction, orthotics R&D.
  - **Revenue**: Minimal, **focus** on feasibility & clinical validation.
- **Year 2**
  - **Additional Investment**: ~$5M more for scaling.
  - **Revenue**: **$5–7M** from lithium/REE, **$2–3M** from orthotics.
- **Year 3**
  - **Scaling**: Achieve moderate production & expanding orthotic distribution.
  - **Revenue**: **$15–20M** total, bridging both sectors.
- **Year 5**
  - **Full-Scale**: 500,000 gallons/day of brine, 10,000 tons coal waste/year, 10k+ orthotics devices sold.
  - **Annual Revenue**: **$50–75M** (REE + lithium), **$30–40M** (orthotics).
  - **IRR**: **20–25%** over 5–7 years.
  - **Breakeven**: By **Year 3**.
  - **3x ROI**: By **Year 5**, leveraging both mining & AI healthcare expansions.

10-Year Outlook

- **Expanded Production**: Potential to **double** or **triple** annual lithium/REE output with additional facilities.
- **Orthotics Market Penetration**: Capturing **20–25%** of national demand for AI-driven mobility devices.
- **Robust State Economy**: **$200M+** in annual revenue, thousands of stable jobs, and deeper supply chain maturity.

15-Year Outlook

- **Global Leadership**: Ohio emerges as a **major** lithium & REE hub, fueling **EV**, **battery**, and **wind** markets worldwide.
- **Advanced Healthcare Solutions**: Invisa.ai™ attains **international** market share, offering **wearable robotics**, specialized diabetic foot care, and senior fall prevention.
- **Legacy Remediation**: Long-term treatment of **historic coal waste** and brine contamination, ensuring a **cleaner environment** for future generations.

Return on Investment & Risk Mitigation

1. **Diversified Revenue**
   - **Minerals** (lithium/REEs), **orthotics device sales** (Invisabrace®, InvisaSole®), **telehealth platform** (Invisa.ai™).

- Reduces market risk by integrating both **mining** and **healthcare**.

2. **Staged Investment**
   - **Phases** validate each milestone (pilot extraction success, clinical trial outcomes) before further capital infusion.
3. **Local Partnerships**
   - **Ohio State University** and **Cleveland Clinic** reduce R&D/clinical risks.
   - **Public grants** may offset environmental cleanup costs.
   - **Private sector** invests in guaranteed off-take for EV/renewable supply chains.
4. **Clinical Validation**
   - Data from **Invisa.ai™** trials supports **insurance coverage** for orthotics, broadening the potential patient base and revenue.

Conclusion

The **Ohio initiative** under the **AISF Master Plan** presents a **high-impact, scalable** solution to **critical mineral shortages** and **healthcare needs**. This project aligns economic growth, environmental remediation, and public health improvements by extracting lithium and REEs from shale brines and coal waste and deploying AI-driven orthotics for large populations with mobility impairments. With **$30–40M** in capital through Phases 1 and 2, the initiative targets **$50–75M** in annual REE/lithium revenue and **$30–40M** from orthotics by **Year 5**, yielding a **20–25% IRR** and **3x ROI** by **Year 5**. Over **10–15 years**, Ohio stands to become a **leading hub** for sustainable resource extraction and **AI healthcare innovation**, benefiting both **domestic supply chains** and **underserved communities**.