U.S. Army Corps of Engineers

TOP TEN R&D Priorities

Advancing National Priorities » Delivering USACE Mission

1 Mitigate and Adapt to Climate Change

- Adapt to a changing environment and the impacts of increasingly extreme weather at home and abroad
- Advance innovative practices to mitigate DOD greenhouse gas emissions
- Support resilient and renewable energy production

Net Zero Greenhouse Gas Emissions by 2050 | *White House*

» Adapt installations and infrastructure to **reduce destructive impacts of climate change**

2 Win Future Wars

- Develop engineering and geospatial technologies that transform our warfighter's ability to WIN in Multi-Domain Operations
- Ensure decisive advantage in mission command, intelligence, force protection, force projection, maneuver, maneuver support, fires, logistics, and sustainment

Advance the National Defense Strategy

» **Align with Army Modernization Priorities** | *DOD*

3 Modernize Our Nation's Infrastructure

- Develop and deploy more efficient and resilient engineering solutions in materials science, construction techniques, and advanced inspection technologies
- Improve risk analysis, performance forecasting, and modeling approaches for existing and new infrastructure

Support rebuilding aging and inadequate infrastructure

» **Reduce unscheduled navigation infrastructure downtime** by 25%

» **Extend service life** of existing and future infrastructure by 50%

4 Support Resilient Communities

- Develop advanced predictive models and tools to support integrated water resource management and proactive disaster prevention or mitigation
- Develop new approaches for improved emergency response and multi-purpose risk reduction infrastructure that make communities safe while adding social and environmental benefits
- Develop geospatially enabled, data-driven tools to better assess community vulnerabilities and support more equitable and environmentally just decision making

Ready the Nation for catastrophic disasters | *FEMA Strategic Plan*

» **Predict water levels and flow** in all watersheds 50x faster and 50x more accurately to support infrastructure risk reduction

5 Enable Smart and Resilient **Installations**

- Develop and integrate advanced technologies to modernize military installations and enhance their strategic readiness
- Promote resilient installations by using a coordinated approach to energy, water, and waste management

- Improve Soldier and family **quality of life**
- **Achieve outcomes** of the Army Installations Strategy | *DOD*

6 Ensure **Environmental** Sustainability and Resilience

- Innovate holistic approaches to aligning Civil Works projects with ecosystem benefits, such as *Engineering with Nature*©
- Generate innovative technologies to reduce the impacts of harmful algal blooms (HABs), nuisance species, and toxic wastes

- **Enable the *America the Beautiful*** national call to action to conserve and restore lands, waters, and wildlife
- **Reduce impacts from harmful algal blooms and invasive/nuisance species** on USACE projects by 50%
- Use over 70% of the **sediment dredged from navigation channels for environmental benefit**

7 Secure Reliable Installation **Energy**

- Deliver reliable energy at military installations and critical missions, powered by carbon-free energy
- Improve energy efficiency and independence by deploying sensors, advanced battery technology, microgrids, and energy conservation technologies

- **Improve mission and installation energy reliability** by 10x
- **Achieve outcomes** of the Army Installations Strategy | *DOD*

8 Revolutionize and Accelerate **Decision Making**

- Develop data-driven decision support technologies that leverage advanced artificial intelligence, machine learning, computer simulations, and autonomous robotic systems

- **Support the goals of the National A.I. Research Resource Task Force**
- **Minimize planning, engineering, design, construction, and operational costs, and safety risks**
- **Increase operational success** by accelerating decisions to the speed of relevance

9 Improve Cyber and Physical **Security**

- Develop physical and cyber secure solutions that minimize the threat to installations and infrastructure
- Advance control systems that quickly mitigate potential attacks

- **Advance the US cyber security strategy**
- **Accelerate the detection of and response to cyber security incidents from months to minutes**

10 Protect and Defend the **Arctic**

- Develop science and engineering solutions for the Arctic and other extreme environments that mitigate impacts to ecosystems and infrastructure while helping to protect the homeland

- Maintain **US Arctic dominance**
- **Achieve outcomes** of the Army's and DOD's Arctic Strategy