Office of Land and Emergency Management - Climate Adaptation Addendum

- OLEM will continue to use its existing guidance to inform the incorporation of TEK/IK (Traditional Ecological Knowledge/Indigenous Knowledge) in our Climate Adaptation practices and work with EPA-OITA when appropriate.
  - Considering Traditional Ecological Knowledge (TEK) During the Cleanup Process
  - Consideration of Tribal Treaty Rights and Traditional Ecological Knowledge in the Superfund Remedial Program
- OLEM will incorporate Climate Change tools and processes into BIL and IRA projects and programs, where appropriate.
- OLEM will continue to be protective of human health and environmental impacts, while considering future Federal financial impacts of Climate Change.

Table - OLEM Priority Adaptation Actions in FY 2024[1]

Relevant Program	Priority Action	Vulnerability Addressed	Performance Metric and Timeframe
All programs	5. Release the OLEM FY 2024 CAIP Addendum.	Agency priority 1: Integrate climate adaptation into programs (addressing multiple specific vulnerabilities). OLEM Vulnerabilities Addressed: • Restoring Land • Emergency Response • Municipal Waste and Materials • Vulnerable Communities • State Grants and Program Funding	FY 2024: Release the OLEM FY 2024 CAIP Addendum.
All programs	6. Develop and deliver targeted adaptation training and identify internal and external stakeholder audiences and channels to share training and materials.	Agency priority 1: Integrate climate adaptation into programs (addressing multiple specific vulnerabilities). OLEM Vulnerabilities Addressed: • Restoring Land • Municipal Waste and Materials • Vulnerable Communities • State Grants and Program Funding	FY 2024: Continue and expand internal staff training on climate adaptation and co-benefits of climate mitigation for OLEM staff. Develop and publish OLEM-specific information, resources and tools on Climate Adaption on EPA.gov FY 2024: Discuss of TEK/IK twice a year in tribal training for OLEM Staff.
All programs	7. Develop climate adaptation fact sheets on (a) characterization of sites with known or potential	Projected climate scenarios should be used in assessing contaminated sites, selecting site remediation and waste containment strategies	FY 2024: Draft new and updated climate adaptation fact sheets.

[1] Reflects updates to OLEM Priority Adaptation Actions in FY 2022-2023, Table 3.2 for the 2024 Fiscal Year (https://www.epa.gov/system/files/documents/2022-10/bh508-OLEM%20CAIP_August%202022_POST_OGCreview_9.12.2022.pdf)

Relevant Program	Priority Action	Vulnerability Addressed	Performance Metric and Timeframe
	contamination and (b) known, recurring non-severe weather and climate adaptation challenges. Additionally, update the existing fact sheet on sediment remedies to include technical guidance specific to evaluating and addressing climate vulnerabilities affecting sediment caps.	at contaminated sites, and designing and constructing remedies at contaminated sites. OLEM Vulnerabilities Addressed: • Restoring Land • Municipal Waste and Materials • Vulnerable Communities	
All programs	8. Integrate technical capacity into programs to provide accurate and actionable site-specific climate vulnerability assessments.	Agency priority 1: Integrate climate adaptation into programs (addressing multiple specific vulnerabilities). OLEM Vulnerabilities Addressed: • Restoring Land • Emergency Response • Municipal Waste and Materials • Vulnerable Communities • State Grants and Program Funding	FY 2024: Deploy & continue developing technical capacity across several program areas; 1 new tool and 1 Issue paper will be rolled out to assess climate vulnerabilities and capture actions taken.
All programs	9. Focus on deploying assessments for communities located near contaminated or waste management sites, municipal waste management facilities or waste recycling facilities, where there are identified climate vulnerabilities.	Communities with potential environmental justice concerns may require additional engagement and resources to evaluate and address climate vulnerabilities they may face related to the proximity of chemical facilities, contaminated sites, waste management facilities and oil facilities. OLEM Vulnerabilities Addressed: • Restoring Land • Emergency Response • Municipal Waste and Materials • Vulnerable Communities • State Grants and Program Funding	FY 2024: Climate assessments will be integrated into 4 site-specific programmatic activities.
RCRA Corrective Action/PCB Approval	10. Develop 3 memoranda that call for climate change impacts to be considered as part of RCRA corrective action, RCRA permitting, and PCB approvals.	Projected climate scenarios should be used in remediating contaminated sites, issuing and renewing RCRA permits and issuing PCB approvals.	FY2024: Develop and finalize memoranda

Office of Land and Emergency Management - Connections between Climate Adaptation and Mitigation

In addition to integrating climate adaptation into our clean-up, prevention and response programs, OLEM has several programs that work to mitigate greenhouse gas (GHG) emissions.

OLEM Works with Tribes on Mitigation:

While Tribal governments are not often major contributors to GHG emissions, Tribes can take actions that reduce GHGs. In many cases, these mitigation actions also protect Tribal sovereignty and provide economic and social benefits, while helping Tribes build resiliency and better prepare for climate impacts. In addition, indigenous knowledge may help Tribes, EPA, and other partners find new paths forward on climate mitigation efforts.

Greener Cleanups:

Lead by the Superfund program, many of OLEM's cleanup programs use green remediation strategies to reduce the environmental footprint of cleanups. Green remediation is the practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprints of cleanup actions. Green remediation strategies aim to reduce total energy use and increase the percentage of energy from renewable resources; reduce air pollutants and GHG emissions; reduce water use and preserve water quality; conserve material resources and reduce waste; and protect land and ecosystem services (supporting adaptation). Opportunities to decrease the footprint and maximize the environmental outcome of a cleanup exist throughout the life of a project, from site investigations through development of cleanup alternatives and remedy design, construction, operation and monitoring. See EPA's Principles for Greener Cleanups.

Brownfields Infill Redevelopment:

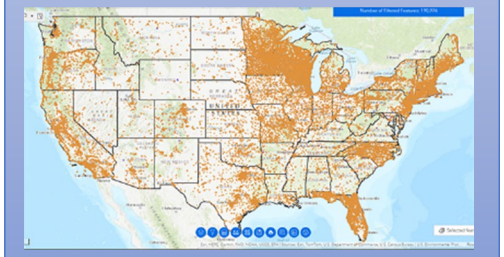
Brownfield sites are often located in densely developed, centralized areas with existing transportation and utility infrastructure, known as "infill" development sites. By cleaning them up and redeveloping them into community and economic assets, such as parks and plazas, mixed-use developments, homes, or businesses, infill development can lead to shorter car trips and overall reduced car use due to more efficient home/work travel patterns. These efficient travel patterns reduce growth in vehicle miles traveled (VMT), thus reducing GHG emissions. A study completed for EPA in 2020 found that when housing and job growth are accommodated by redeveloping existing brownfields sites, employees who work on or near redeveloped brownfield sites drove 9-10% fewer VMT, and residents living on or near those sites drove 25-33% fewer VMT.

In addition to this important work, OBLR encourages brownfield communities and grantees to incorporate mitigation strategies throughout the planning, assessment, cleanup, and redevelopment process.

RE-Powering America's Lands:

EPA's RE-Powering America's Lands Initiative encourages renewable energy development on current and formerly contaminated lands, landfills, and mine sites when such development is aligned with the community's vision for the site. Over 500 sites in the US have placed renewable energy generation on formerly contaminated sites. Through the *RE-Powering Mapper*, RE-Powering America's Lands Initiative collaborated with the National Renewable Energy Lab and several state agencies to pre-screen over 190,000 potential sites where similar development can take place throughout the US.

The RE-Powering Mapper



Circular Economy:

Within OLEM, some of the most significant efforts directed towards the mitigation of greenhouse gas (GHG) and climate change impacts come from ORCR's work to support a circular economy[2]. A circular economy helps to reduce GHG usage (along with other inputs) by keeping materials and products in circulation for as long possible, reducing material use, redesigning materials and products to be less resource intensive, and recapturing "waste" as a resource. Integral to this work are ORCR's three circular economy strategies, the *National Recycling Strategy: Part One of a Series on Building a Circular Economy*, the *Draft National Strategy to Prevent Plastic Pollution*, and the *Draft National Strategy for Reducing Food Loss and Waste and Recycling Organics*, which lay out ways to directly or indirectly lower GHG emissions through activities such as reducing, reusing, recycling, composting, and anaerobic digestion.

In particular, *The Draft National Strategy for Reducing Food Loss and Waste and Recycling Organics*, lays out actions with direct GHG mitigation potential, since an estimated 58% of methane emissions from municipal solid waste landfills are from landfilled food waste[3]. The strategy identifies actions to prevent the loss and waste of food, to increase the recycling rate for all organic waste, and to support policies that incentivize and encourage food loss and waste prevention and organics recycling. Two of the food pathways, composting and anerobic digestion, have adaptation as well as mitigation contributions. Organic materials, including food waste, yard trim, and manure can be turned into valuable soil amendments via composting and anaerobic digestion.

Composting: Where Adaptation & Mitigation Meet

Composting food and other organic materials addresses mitigation as these materials are diverted from landfills, thus avoiding methane emissions. Adding compost to soil can address mitigation and adaptation, as it can help sequester carbon, build healthy soils, and increase the soil's ability to retain water, therefore building resilience to climate change impacts such as flooding and droughts

In addition to the circular economy work, ORCR works with ORD on projects and reports that refine and add to the greenhouse gas (GHG) reduction picture, makes measurement tools available to help US policymakers understand the GHG emission implications of different materials management strategies, and issues

[2] The United Nations' International Resource Panel concluded that natural resource extraction and processing contribute to about half of all global greenhouse gas emissions (UNEP IRP 2019).

[3] *Quantifying Methane Emissions from Landfilled Food Waste* (EPA 2023)

grants that have the potential to reduce or influence GHG emissions. They have developed SMM Prioritization tools which allow the user to sort the entire economy by GHG emissions and co-benefits, a Recycling Infrastructure and Market Opportunities Map, which provides comprehensive opportunities related to post-consumer materials management, and the Waste Reduction Model (WARM), which provides high-level estimates of potential greenhouse gas (GHG) emissions reductions, energy savings, and economic impacts from several different waste management practices. The Bipartisan Infrastructure Law, provided $275 million for a Solid Waste Infrastructure for Recycling Grant Program, and $75 million to fund a new Recycling Education and Outreach Grant Program, through the year 2026. These grants fund the actions identified in the National Recycling Strategy, by supporting post-consumer materials management and infrastructure; supporting improvements to local post-consumer materials management and recycling programs; and assisting local waste management authorities in making improvements to local waste management systems. Projects funded through the REO grant program will inform the public about recycling or composting programs, provide information about those programs, and generally help to increase collection rates across the nation.