

Midwest Industrial Decarbonization Challenge

A CPRG Coalition of States

Illinois, Michigan, Minnesota, Ohio, Wisconsin

April 1, 2024

WORK PLAN NARRATIVE

1. OVERALL PROJECT SUMMARY AND APPROACH

The Michigan Department of Environment, Great Lakes, and Energy (EGLE), as coalition lead (Coalition Lead), Illinois Environmental Protection Agency, Minnesota Pollution Control Agency, Ohio Environmental Protection Agency, and Wisconsin Office of Sustainability and Clean Energy (together, the “Coalition”) propose to carry out an industrial decarbonization competition that consists of two components: (1) a predevelopment program providing support to large industrial facilities for carrying out technical assessments and planning, to be handled by each Coalition member in their state; and (2) a competitive grant program to support decarbonization projects at large industrial facilities located in Coalition states, to be administered by the Energy Resources Center of the University of Illinois Chicago (“UIC”) in collaboration with Coalition members. Roles and responsibilities of each Coalition member are described in Table 1.

The states participating in this Coalition have long been the industrial heartland of the United States. Together, the Coalition states were responsible for 12 percent of U.S. industrial emissions in 2022.¹ Ohio and Illinois are the 5th and 6th largest industrial emitting states, respectively. Michigan and Minnesota are also top-20 industrial emitting states at 12th and 16th, respectively. Wisconsin ranks 32nd among industrial emitters. The table below shows the breakdown by industrial sub sector for the Coalition states.

Industrial Subsector	Total Emissions	Share of Emissions in 5-state Region
Refining	20,227,262	30%
Iron & Steel	13,543,198	20%
Cement & Lime	7,515,764	11%
Agricultural Processing	7,251,405	11%
Agricultural Chemicals & Fertilizer	4,746,475	7%
Paper Products	3,808,542	6%
Coke	2,229,780	3%
Chemicals	1,899,221	3%
Coal Mining	1,689,808	2%
Waste	1,581,403	2%
Industrial Gasses	1,216,872	2%
Natural Gas Systems	976,153	1%
University	812,130	1%
Carbon Removal	557,212	1%
Glass	407,772	1%

¹ Emissions information comes from the U.S. Environmental Protection Agency’s (EPA) Greenhouse Gas Reporting Program, 2022.

a. Description of Industrial Decarbonization Predevelopment and Challenge Grant Program

The predevelopment program and challenge grant components of the Midwest Industrial Decarbonization Challenge are described below.

The Predevelopment Program

Each Coalition state will receive funding totaling \$10.3 million per state for the predevelopment portion of the Climate Pollution Reduction Grant(CPRG) implementation grant (first two years), after providing for lead state administrative costs and the costs of funding the non-profit convener and technical assistance provider, to fund the following activities:

- i. *Add Staff Capacity.* Each Coalition state will create an industrial decarbonization program by adding 3.0 full-time employee equivalents (FTE) – a director, a specialist, and an analyst – or equivalent contracting capacity to staff and manage the state’s participation in both the predevelopment and competitive regionwide grant program components.
- ii. *Provide Predevelopment Assistance to Large Industrial Facilities.* Each Coalition state will provide technical assistance to large industrial facilities to identify and develop decarbonization opportunities and to prepare for implementation of decarbonization projects, including the challenge grant funded under this proposal. Projects must achieve a minimum of 40 percent reduction in combined scope 1 and scope 2 greenhouse gas (GHG) emissions, maximize local air pollution reductions in low-income and disadvantaged communities (LIDAC), and demonstrate efforts to maximize private sector investments and federal tax credit uptake. States will have discretion to support the predevelopment efforts that are needed at their large industrial facilities, and those efforts may include American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Level II assessments and support for engineering studies necessary for planning projects. Each Coalition member will work with their respective state university that currently manages a U.S. Department of Energy (DOE) Industrial Assessment Center (or equivalent) to provide this predevelopment assistance.² Coalition member states may also administer an application process for large industrial facilities to access up to \$6 million in additional funding for predevelopment assistance.
- iii. *Coordinate with Other Coalition Members.* Each Coalition state will coordinate with other states in the coalition to share best practices, provide updates on progress and collaborate with the coalition lead, the non-profit convener and technical assistance providers, the UIC, and the respective state university with industrial assessment expertise in each state. With the assistance of a non-profit convener, the Coalition Lead will regularly convene the Coalition states to carry out this coordination.
- iv. *Advance Statewide Industrial Decarbonization.* Each Coalition state will advance industrial decarbonization by executing a stakeholder engagement process, modeling and analysis, and LIDAC engagement to identify barriers and policy and program recommendations to

² In Illinois, the University of Illinois Chicago Industrial Assessment Center; in Michigan, Michigan State University Industrial Assessment Center; in Ohio, the University of Dayton Industrial Assessment Center; in Minnesota, the University of Minnesota Technical Assistance Program; and in Wisconsin, University of Wisconsin, Milwaukee Industrial Assessment Center. Whenever reference is made to “IAC” in this application, it references the University that has the industrial assessment expertise and staffs the IACs.

decarbonize the state's industrial sector, and work to implement those recommendations. Each Coalition state will also host an annual statewide Industrial Decarbonization Conference or similar convening to identify and address barriers to industrial decarbonization, build a shared understanding of established and emerging solutions, and highlight resources and programs available from the federal government, state government, and other sources.

Each Coalition state brings contributions to this project in the form of existing capacity and experience working with industrial and manufacturing facilities in their states. In addition, some members will leverage available state funding, while others will engage their existing state economic development teams to assist in the effort to support innovation and investment at existing industrial facilities in participating states in ways complementary to this proposed predevelopment component.

The Competitive Challenge Grant Program

The Coalition will work with the UIC to administer a \$416 million dollar challenge grant program open to the large industrial emitters across the participating states. In addition, each coalition state will receive approximately \$5 million, after providing for lead state administrative costs and the costs of funding the non-profit convener and technical assistance provider, to fund ongoing staff capacity and participation in the challenge portion of the program. During the challenge portion, facilities will compete for grants against other facilities in the Coalition states, as follows:

- v. *Challenge Grant Amounts.* It is expected that between 15 and 40 grants will be awarded in amounts of up to \$50 million in size. At least three grants will be awarded in each Coalition state.
- vi. *Eligible Facilities.*³ Industrial facilities from each member state are eligible to compete for challenge grants. These facilities will be encouraged by each coalition member to participate in the challenge grant program.
- vii. *Eligible measures.* The following measures are eligible for challenge grant funding:
 - Electrification, heat pump installation, thermal storage, and use of other low- and zero-carbon sources of industrial heat;
 - Lighting and heating, ventilation, and air conditioning (HVAC) improvements;
 - Heat recovery;
 - Facility maintenance and system upgrades;
 - Carbon capture technologies;
 - Recycling and waste management upgrades;
 - Fuel-switching to low-carbon fuels, such as hydrogen made from renewable energy or nuclear energy; and

³ The Coalition states acknowledge EPA's intention to not fund the same measure in the same location with CPRG funds. The Coalition states commit to ensuring projects do not receive funding from more than one CPRG implementation grant award. No facility will be eligible for funding under this Midwest Industrial Decarbonization Challenge if it has received other CPRG funding.

- Equipment replacement and upgrades to improve system efficiency.
- viii. *Minimum Challenge Grant Requirements.* All projects receiving funding under the grant challenge will be required to, at a minimum, leverage private capital at a minimum ratio of 4 to 1; result in a minimum emissions reduction of 40 percent of combined scope 1 and scope 2 GHG emissions; demonstrate a substantial reduction in co-pollutants; and develop a comprehensive community benefits plan.
- ix. *Competitive Criteria.* Projects that meet the minimum requirements will compete based on how well they satisfy the following grant criteria above and beyond the minimum requirements:
- Reductions in direct scope 1 and indirect scope 2 GHG emissions;
 - Local air pollution benefits;
 - LIDAC benefits;
 - Private sector funding leverage;
 - Use of relevant tax credits and other federal incentives, loans, or grants; and
 - Overall impact on scope 3 GHG emissions.

Coalition states, in partnership with the UIC, will develop the challenge grant program after CPRG grant funds are awarded and additional competitive criteria may be added at that time to ensure the best, most impactful projects are selected in the region. The UIC will administer the challenge grant program under the direction of the Coalition Lead and with the input of Coalition member states. The UIC will establish a program web portal; outreach materials for coalition members to use; a standard application; conduct one or more Q&A sessions for potential applicants; provide for the technical review of the challenge grant applications and recommend scoring to the regional application evaluation committee board (described in the following paragraph). The evaluation committee will apply the criteria in a manner that ensures at least three projects will be carried out in each Coalition state.

A challenge grant application evaluation committee consisting of representatives from all Coalition states, as well as additional expert members selected by the Coalition, will make the final decisions on grant recipients. Applications will be scored based on objective criteria decided before the challenge grant program begins. Each Coalition state will appoint one member to the committee. The UIC will provide technical input to the committee and a non-profit convener will convene the evaluation committee.

Table 1 Coalition Roles and Responsibilities

Entity	Roles and Responsibilities
Coalition Lead: Michigan Department of Environment, Great Lakes, and Energy	<ul style="list-style-type: none"> ● Submit to EPA a fully executed Memorandum of Agreement (MOA) signed by all coalition members by July 1, 2024 ● Issue subawards to coalition partners for the predevelopment, technical and planning assistance component of the program, in accordance with EPA's Subaward Policy ● Issue a subaward to the UIC to enable the UIC to function as program administrator for the competitive grant program, in accordance with the EPA's Subaward Policy ● Issue a subaward to a non-profit convener to assist the Coalition Lead in convening the coalition members from time to

	<p>time and provide for collaboration by the coalition members, in accordance with the EPA's Subaward Policy</p> <ul style="list-style-type: none"> ● Overseeing subrecipients, and/or contractors and vendors ● Tracking and reporting on project progress on expenditures and purchases ● Tracking, measuring, and reporting accomplishments on proposed timelines and milestones ● Submitting semi-annual progress reports on grant implementation and planned activities to the EPA ● Submitting detailed final report to the EPA within 120 calendar days of the completion of the period of performance ● Community and stakeholder outreach and education within Michigan for both the predevelopment and challenge grant components of the program ● Carry out the predevelopment component of the program in Michigan, working closely with the Industrial Assessment Center at Michigan State University (MSU) ● Identify and/or make available additional incentives for industrial decarbonization projects within the state to complement the challenge
<p>Coalition Members:</p> <ul style="list-style-type: none"> ● Illinois Environmental Protection Agency; ● Minnesota Pollution Control Agency; ● Ohio Environmental Protection Agency; and ● Wisconsin Office of Sustainability and Clean Energy. 	<ul style="list-style-type: none"> ● Enter into an MOA with all Coalition states so that the Coalition Lead can submit to EPA no later than July 1, 2024 ● Carry out the predevelopment, technical, and planning assistance component of the program with the assistance of the state's Industrial Assessment Center or equivalent entity,⁴ in compliance with the subrecipient requirements of EPA's Subaward Policy ● Participate in regional convenings to share best practices, generally support industrial facilities in the state to prepare for participation in the program, and appoint a member to the regional challenge grant application evaluation committee ● Tracking and reporting to Coalition Lead on project progress on expenditures and purchases within each Coalition state's jurisdiction ● Tracking, measuring, and reporting to Coalition Lead on accomplishments and proposed timelines and milestones within each Coalition state's jurisdiction ● Community and stakeholder outreach and education within each Coalition state's jurisdiction ● Identify and/or make available additional incentives for industrial decarbonization projects within their respective states to complement the challenge

⁴ See footnote 1 for a list of the DOE-supported centers that will serve as industrial assessment centers for this grant program.

Table 2 details tasks and milestones for implementation of the proposed industrial grant challenge program. The period of performance is December 2024 to December 2029. Table 3 details anticipated risks associated with measure implementation and mitigation strategies for each risk.

Table 2 Tasks and Milestones

Task #	Task Description	Anticipated Milestone Dates ⁵	Assumptions
EPA	Notification of Funding Selection	July 2024	
1	Develop program materials for the predevelopment component of the program (incl. program guide, website, application, outreach materials)	October 2024	Coalition states work together with assistance of non-profit convener, technical assistance provider the UIC and state industrial assessment centers.
EPA	Anticipated Award	October 2024	
2	Distribute state shares of predevelopment funding to state partners for predevelopment, technical and planning assistance	November 2024	Coalition Lead distributes funds received from EPA
3	Contract with non-profit convener and technical assistance provider (the UIC) to support the predevelopment component of the program; States contract with in-state IACs.	November 2024	
4	Stand up/go live with predevelopment component and commence industry outreach around program	December 2024	Coalition states conduct outreach, non-profit convener and the UIC assist
5	Community engagement around program design specifics	November 2024 – December 2025	Concurrent with standing up program components
6	Preparation of materials for \$416 million challenge grant program (program guide, application, and promotional materials and community engagement around these materials)	November 2024 – December 2025	Coalition states work together with assistance of non-profit convener and technical assistance provider, the UIC
7	Stand up challenge grant program; Educate stakeholders and communities about program guide and solicit applications for projects	January 2026 – December 2026	Three months following completion and publication of the program guide and promotional materials
8	Accept application for challenge grants	January to February 2027	Provides large emitters with 2 years to prepare for challenge grant competition

⁵ These dates may be revised based on stakeholder and community input.

9	Review applications, select projects, and enter into agreements with project sponsors	March 2027 – May 2027	One month to evaluate and select successful applications and two months to enter into agreements with project sponsors
10	Disburse funds to project sponsors	May 2027	As established in the agreements with project sponsors
11	Semi-annual review of progress on grant projects	December 2027 and every 6 months	Coalition states work together with assistance of non-profit convener and technical assistance (the UIC)

Table 3 Risks and Mitigation Strategies

Risk	Effect on GHG emission reductions	Mitigation Strategy
Program undersubscribed and the \$416 million is not spent in one round of challenge grants	Delays may reduce cumulative GHG emission reductions in the near-term (2025 – 2030)	Carry out a second round of competitive applications with potential adjustments to competitive criteria (excluding GHG emissions impact)
A Coalition state drops out of the program	The program is not carried out in that state	MOA will provide that the funds will be returned to Coalition Lead and will be added to the \$416 million challenge grant pool

Table 4 demonstrates how this proposed measure relates to GHG reduction measures in Coalition member PCAPs. This measure was selected as a priority because industrial innovation to reduce emissions is an imperative across all of the Coalition member states. While industry represents a significant portion of each state’s GHG emissions inventory, it is a sector that has often received the least attention among sectors. The CPRG funding offers an opportunity to address industrial emissions through a voluntary, incentive-based approach that emphasizes innovation and investment.

Table 4 Alignment with Coalition Member PCAPs

Coalition Member	PCAP References to Measure to be Implemented
Illinois	State of Illinois Priority Climate Action Plan, at page 64, available here .
Michigan	Michigan’s Priority Climate Action Plan, at page 90, available here .
Minnesota	MN Priority Climate Action Plan, at page 42, available here .
Ohio	OH Priority Resiliency Plan, at pages 46, 56-57, available here .
Wisconsin	Wisconsin Emissions Reduction Roadmap, at page 18, available here .

This proposed Midwest Industrial Decarbonization Challenge will advance EPA’s CPRG goals as follows:

1. Ambitious Program that will Achieve Significant Emissions Reductions. The challenge grant program proposed in this application brings together a diverse set of states in America’s industrial heartland to support innovation in the industrial and manufacturing sector – a sector that has often received the

least attention when it comes to government support of emissions reductions projects. The predevelopment component of the program will help large industrial facilities identify innovative measures to lower costs, while reducing emissions. Some of the measures identified will be possible without additional government assistance. Others will become the focus of challenge grant applications. The challenge grant criteria will ensure that facilities receiving challenge grants achieve significant emissions reductions.

2. *The Program will Achieve Substantial Community Benefits.* The program will result in additional private investment at existing industrial and manufacturing facilities in the region, making the facilities more competitive and supporting the continuation of the jobs and community benefits they provide. The challenge grant criteria will ensure that the projects awarded grants will provide robust community benefits reflected in a comprehensive community benefits plan. The program will pursue measures that will achieve substantial community benefits (such as reduction of criteria air pollutants (CAPs) and hazardous air pollutants (HAPs)), particularly in LIDACs. The community benefits plan will also provide benefits in addition to the reductions in localized pollution that will result from the projects funded.

3. *The Program will Complement Other Funding Sources.* It is well understood that existing programs to support industrial innovation and decarbonization at the federal and state levels are necessary but not sufficient on their own to meet the full need such facilities have. As such, the predevelopment component will help industrial facilities identify additional federal funding sources to implement their projects, while the grant challenge program proposed will complement the other available funding sources to maximize GHG reductions and community benefits. A review of some other funding sources is provided in Table 5. Additionally, participating states will identify additional resources and leverage existing economic development tools to support industrial decarbonization. For example, Michigan intends to leverage its \$337 million “Make it in Michigan Competitiveness Fund” to bolster the program in that state.

4. *The Program is Replicable and Scalable.* The proposed program is both replicable and scalable in other states and regions. The predevelopment component will help industrial facilities identify worthwhile projects at their facilities. Some of the projects identified will already be cost effective without additional government support or through other available federal funding programs, yielding investments at industrial sites that other states could easily support. For those measures that require additional government support, the challenge grant program will demonstrate a way for other states and regions to lift up the promising ideas for funding, ensuring that investments go to the very best projects.

b. Demonstration of Funding Need

CPRG implementation funding is necessary to carry out the proposed industrial decarbonization challenge grant program and achieve the emissions reductions and other benefits of the program. Table 5 lists federal funding sources that coalition members have taken into account as the proposed grant program was developed. Industrial decarbonization presents a special challenge because industry faces international competition that is less present in other domestic economic sectors, such as the power, buildings, and transportation sectors. Incentive-based programs such as the proposed grant program are needed to lift up the best projects and encourage low-carbon investments in domestic industry and American manufacturing.

Table 5 Funding Sources Examined in Connection with the Proposed Industrial Decarbonization Challenge Grant Program

Funding Source	Funding Status	Need for CPRG funding
48C Tax Credit Program	DOE accepted applications for the current round in December 2023; awards are expected in spring 2024.	The \$4 billion in federal funding is expected to be oversubscribed nationwide. This competitive challenge grant program would only apply to projects that do not receive 48C tax credits.
45Q Tax Credit	Facilities can receive up to \$85 per ton of CO ₂ sequestered.	Facilities would be required to take into account the 45Q tax credit and demonstrate need from the challenge grant program above and beyond the tax credit.
45V Tax Credit	Hydrogen production that meets U.S. Treasury guidelines gets funding through tax credit.	Facilities would be required to take into account the 45V tax credit and demonstrate need from the challenge grant program above and beyond the tax credit.
DOE IEDO Fiscal Year 2024 Cross-Sector Technologies	\$38 million nationwide to advance the strategies identified in the DOE's Industrial Decarbonization Roadmap and support the goals of the Industrial Heat Shot™ through a focus on cross-sector approaches for industrial decarbonization.	Facilities would be required to take into account any support they receive from this federal program and demonstrate need from the challenge grant program above and beyond the program.
DOE FY24 Energy and Emissions Intensive Industries	\$83 million nationwide to support applied research, development, and demonstration (RD&D) for the highest GHG-emitting industrial subsectors, specifically: chemicals and fuels; iron and steel; food and beverage; building and infrastructure materials (including cement and concrete, asphalt pavements, and glass); and forest products.	Facilities would be required to take into account any support they receive from this federal program and demonstrate need from the challenge grant program above and beyond the program.
DOE Clean Energy and Manufacturing Workforce Training and Technical Assistance Awards (IAC Program) Section 40521	\$24 million nationwide to establish new industrial training and assessment centers, as part of the Industrial Assessment Centers (IAC) network, across the United States to train students and incumbent workers for high-quality careers in clean energy, energy efficiency, and advanced manufacturing, and to help small and mid sized manufacturers (SMMs) save money, reduce energy waste, and improve productivity.	Facilities would be required to take into account any support they receive from this federal program and demonstrate need from the challenge grant program above and beyond the program.

DOE Carbon Capture Demonstration Projects Program Front End Engineering Design Studies for Integrated Carbon Capture, Transport and Storage Systems	Funding opportunity has closed. \$189 million nationwide to support Carbon Capture Demonstration Projects Program to de-risk integrated carbon capture and sequestration (CCS) demonstrations and catalyze significant follow-on investments from the private sector for commercial-scale, integrated CCS demonstrations on carbon emissions sources across industries in the U.S.	Facilities would be required to take into account any support they receive from this federal program and demonstrate need from the challenge grant program above and beyond the program.
DOE Clean Energy Manufacturing Innovation Institute for Industrial Decarbonization through Electrification of Process Heating	Funding opportunity closed. \$70 million nationwide for the development of a new institute that will conduct research, development, and demonstration (RD&D) focused on developing and scaling electrified processes that reduce emissions, improve flexibility, and enhance energy efficiency of industrial process heating.	Facilities would be required to take into account any support they receive from this federal program and demonstrate need from the challenge grant program above and beyond the program.
DOE Clean Hydrogen Electrolysis, Manufacturing, and Recycling	\$500 million for the development of manufacturing and recycling of clean hydrogen technologies, and \$1 billion for electrolyzer development for the five.	Facilities would be required to take into account any support they receive from this federal program and demonstrate need from the challenge grant program above and beyond the program.
DOE Industrial Decarbonization and Emissions Reduction Demonstration-to-Deployment	Funding opportunity has closed. \$6 billion in federal funds for projects that will validate low-GHG emitting industrial facilities capable of manufacturing products and materials with low-carbon footprints. DOE aims to fund projects in the highest emitting, hardest-to-abate industries where rapidly deployed decarbonization technologies can have the greatest impact: iron, steel, steel mill products, aluminum, cement, concrete, glass, pulp, paper, industrial ceramics, chemicals, and other energy intensive industrial processes.	Facilities would be required to take into account any support they receive from this federal program and demonstrate need from the challenge grant program above and beyond the program.
State of Michigan State Energy Program investments in industrial decarbonization	Michigan's remaining American Recovery and Reinvestment Act (ARRA) funds will provide \$2.5 million to support industrial energy efficiency initiatives. Centrepolis Accelerator at Lawrence Technological University hosts the Industrial Decarbonization Innovation Challenge	Facilities would be required to take into account any support they receive from this state program and demonstrate need from the challenge grant program above and beyond the program.

	with up to \$250,000 available for the best industrial decarbonization solutions.	
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c. Transformative Impact

The Midwest Industrial Decarbonization Challenge is expected to be transformative for the region and for industrial decarbonization generally. The five states participating in this coalition represent a significant proportion of industrial facilities in the Midwest, some of which compete with one another and some of which are owned by the same company. Catalyzing action at sites in each state via the regional industrial predevelopment and challenge grant program has the potential for truly transformative impacts above and beyond the direct benefits brought about by the grants themselves.

This program will:

- i. Bring together a diverse, bipartisan group of states in America’s industrial heartland. The cooperation and collaboration of the states in this coalition will demonstrate common ground in the effort to advance American industry and manufacturing, supporting innovation and investment that will benefit states and communities within states while contributing to solutions that reduce environmental impacts.
- ii. Demonstrate positive outcomes in the industrial sector that can be scaled and replicated elsewhere. The predevelopment portion of the program will provide assistance to industry in identifying the most promising measures they can take to innovate and advance decarbonization at their facilities. This is an approach other states and regions can readily adopt with minimal investment. The larger challenge grants, in turn, will lift up the most innovative, impactful ideas from across a five-state region and demonstrate success stories for others within the coalition states and in other states and regions.
- iii. Concentrate state efforts toward industrial decarbonization, encouraging states to leverage economic development tools, other state and federal funding programs, and the convening power of the state to drive rapid industrial emissions reductions. For example, Michigan will leverage the tools of the Michigan Economic Development Corporation, the \$337 million “Make it in Michigan Competitiveness Fund,” and \$2.75 million from its State Energy Program. Michigan will also prominently promote the competition and leverage its relationships and convening power through the state’s Michigan Infrastructure Office, Community and Worker Economic Transition Office within Michigan’s Department of Labor and Economic Opportunity, Michigan’s Council on Climate Solutions, the planning and stakeholder engagement activities of the CPRG program, and other state efforts to support Michigan’s industrial facilities pursuing the challenge grant program. Other Coalition states will leverage their existing programs and resources in a similar fashion.

2. IMPACT OF GHG REDUCTION MEASURES

Table 6 provides estimates of the cumulative emission reductions in metric tons of carbon dioxide equivalent (mtCO₂e) anticipated from implementation of both program components for two time

periods: 2025 to 2030 and 2025 to 2050. Further details on quantification methods, relevant assumptions, annual emission reduction estimates, and any uncertainties associated with the estimates are provided in the Technical Appendix to this application.

Table 6 Cumulative GHG Emission Reductions Anticipated from Implementation of Proposed Measures

	Cumulative GHG emission reductions (mt CO ₂ e)	
	2025–2030	2025–2050
Predevelopment Program (Technical Assessments and Planning)	1,553,323	11,099,869
Challenge Grant Program Total	7,402,783	36,055,514
Total	8,792,795	47,155,383

According to our conservative estimates, this program will generate over eight million metric tons of GHG savings by 2030 and over 47 million by 2050. Since it is not possible to know at this time the possible sources of facility matching funds, we have conservatively estimated the GHG reductions represented only by the portion of the project funded directly by the CPRG funding requested in this application. The total emission reduction estimated from this program and its required private capital leverage is over 39 million metric tons by 2030 and over 191 million metric tons by 2050 and could be attributed to CPRG funds if no additional state or federal funding is applied to the projects.

The implementation of the proposal is highly cost-effective. The cost-effectiveness of the proposal, inclusive of all measures in this application, is \$56.87 per ton of CO₂e reduced by 2030 and \$11.86 per ton of CO₂e reduced by 2050.

3. ENVIRONMENTAL RESULTS – OUTPUTS, OUTCOMES, AND PERFORMANCE MEASURES

The Midwest Industrial Decarbonization Challenge will directly support the EPA’s No. 1 strategic goal: tackle the climate crisis. As described in the previous section, the program will significantly reduce industrial GHG emissions in a key industrial region of the country, and do so cost effectively. The program is designed to select projects that bring the best environmental results by drawing industrial facilities into a competitive challenge grant program in which only the best, most impactful projects will win funding to implement decarbonization projects at industrial facilities in the region. As described above, the competitive grant criteria will emphasize the project’s direct scope 1 emissions reductions and benefits to LIDAC communities.

a. Expected Outputs and Outcomes

Outputs from this proposal include:

- i. Added capacity at Coalition state environmental agencies to work closely with industrial facilities in the state to encourage innovation and investment consistent with a low-carbon economy. Each Coalition state is expected to add three FTEs or equivalent capacity for the 5-year performance period of the grant and the Coalition Lead will add four FTEs.

- ii. Added capacity for technical assistance to industrial facilities in the Coalition states through the DOE industrial Technical Assistance Partnerships in the Midwest region at the University of Illinois Chicago and the University of Minnesota.
- iii. Added capacity for technical assistance at industrial facilities in coalition member states through the DOE IACs at the University of Dayton, Ohio; Michigan State University; University of Wisconsin, Milwaukee; and the University of Illinois Chicago.
- iv. An estimated 20 new industrial ASHRAE Level II assessments at industrial facilities in each of the five coalition member states. These assessments will identify cost-effective measures that make sense to implement even if the facility does not receive funding under the challenge grant portion of the program. The assessments also identify other measures facility owners and operators can plan for over time to modernize the facilities.
- v. Between 15 and 40 challenge grants awarded to the very best projects proposed at industrial facilities in the region. The precise features of these projects is not known in advance but the competitive nature of the challenge grant program ensures the very best projects will be identified for support.
- vi. Semi-annual progress reports.⁶
- vii. Detailed final report.

Outcomes from this proposal include:

- i. Reduction in cumulative metric tons of GHG emissions are estimated to be:
 - 2025 – 2030: 8,792,795 metric tons CO₂e
 - 2025 – 2050: 47,155,383 metric tons CO₂e
 - While the precise emissions reductions will depend on the projects selected for funding under the competitive challenge grant program, the design of the program ensures that only the very best, most-impactful projects will be funded. As such, the emissions reduction estimates are likely to be conservative estimates.
- ii. Associated reductions in annual CAP and HAP emissions. Because projects will be selected in part based on the benefits they bring to local communities, the final mix of projects funded under this application are ensured to have strong environmental co-benefits.
- iii. Implementation of projects identified in the technical assistance assessments will reduce energy consumption at the facilities, lower costs, and make the facilities more competitive.
- iv. Lower energy consumption at industrial facilities will reduce overall energy demand, likely reducing energy costs for commercial and residential customers, including low-income residential customers.

b. Performance Measures and Plan

The Coalition has established the following performance measures to track progress concerning successful processes and output and outcome strategies.

- i. Number of industrial facilities in each coalition state that participate in the predevelopment component of the program. “Participation” is defined as receiving technical advice and/or

⁶ Beginning with the second semi-annual report, reporting will include detailed quantified benefits to low-income and disadvantaged communities, including changes in co-pollutant emissions, and provide updates on ongoing and planned community engagement.

assistance from a coalition member, the UIC, the state's IAC, or an affiliated technical assistance provider in the coalition state.

- ii. Number of facilities that plan projects to modernize and innovate at their facilities because those projects were identified in assessments provided by the program.
- iii. Number of industrial facilities in each coalition state that compete in the industrial challenge grant program.
- iv. Number of challenge grants awarded meeting the minimum emissions reduction and community benefit requirements of the program.
- v. Number of projects carried out at industrial facilities with the help of challenge grants.
- vi. Amount of private capital leveraged by the program to carry out innovative investments at industrial and manufacturing facilities in member states.
- vii. Benefits to LIDAC communities.
- viii. Other community benefits, including environmental, health, educational, job and economic benefits, resulting from projects supported by the program.
- ix. Emissions reductions, both GHG and co-pollutant reductions, achieved by projects identified and/or funded in part by the program.

Coalition states and subaward recipients will track progress for each performance measure within their jurisdiction and report progress to Coalition Lead. The Coalition Lead will provide a status update with respect to each performance measure to the EPA in the semi-annual reports and final report.

c. Authorities, Implementation Timeline, and Milestones

All Coalition states have the legal authority to carry out their roles and responsibilities under this coalition proposal. The roles and responsibilities of each coalition member are detailed in Section 1 of this proposal. A detailed implementation timeline – including tasks, key milestones, and key actions needed to meet goals and objectives by the end of the grant period – is provided in Section 1.a of this proposal.

4. LOW-INCOME AND DISADVANTAGED COMMUNITIES

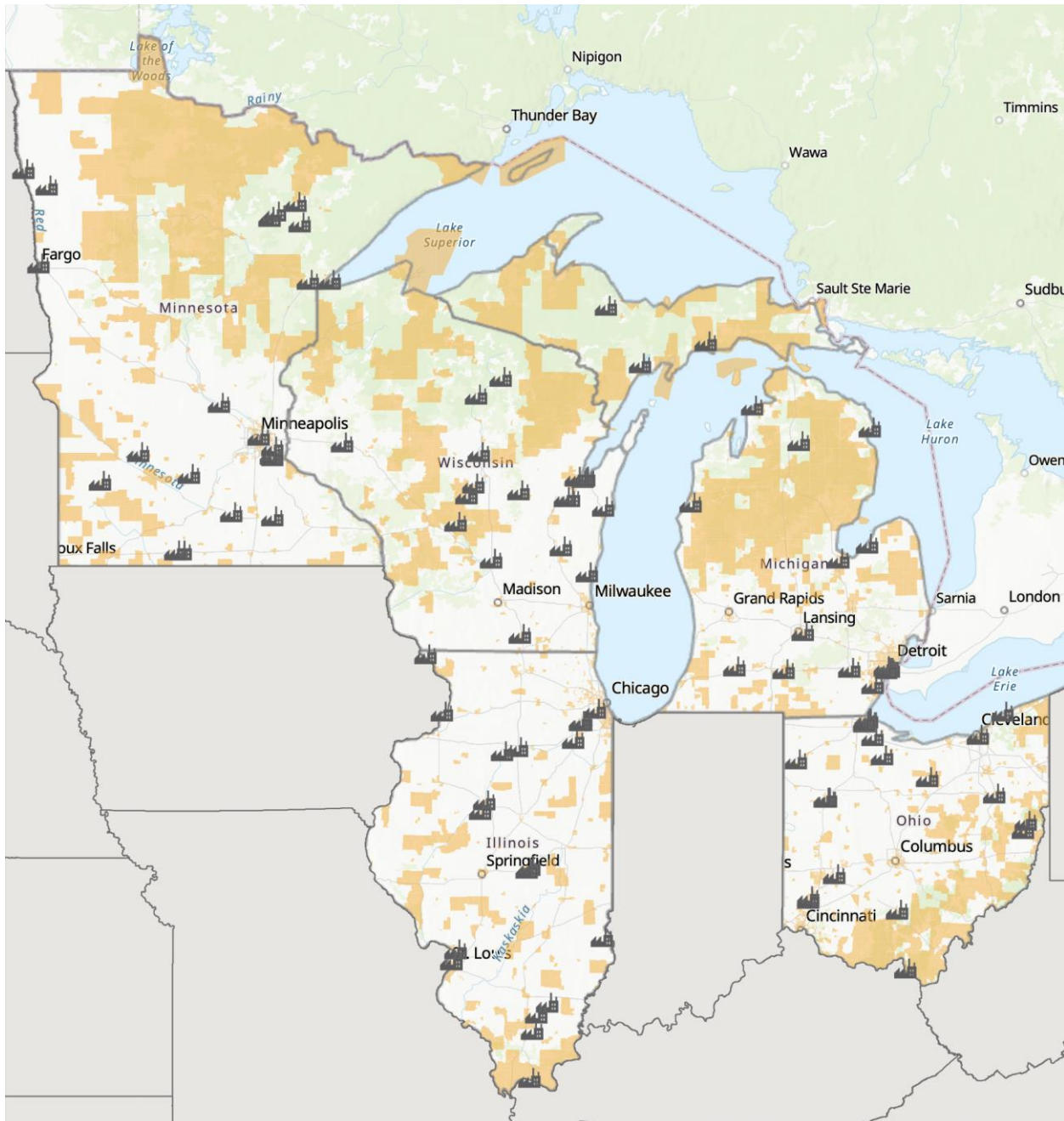
a. Community Benefits

The implementation of the Midwest Industrial Decarbonization Challenge coalition is expected to provide significant benefits to LIDAC communities in the coalition states. As described above, projects that receive technical assistance under the predevelopment component and/or grant funds for projects under the challenge grant component will reduce GHG emissions as well as emissions of co-pollutants. Lowering emissions in the communities where the facilities are located will bring the health and environmental benefits of cleaner air to these communities. At the same time, investments in the facilities will preserve and create good quality, family-sustaining jobs for members of the communities.

Because it is not known precisely which facilities will take advantage of the predevelopment assistance offering and/or apply for and receive challenge grant funding, the map below shows where the top-20 industrial emitters are located in each Coalition state relative to the LIDAC communities using the White House Council on Environmental Quality's Climate and Economic Justice Screening Tool. The majority of

the large industrial emitters in the Coalition states are located in or near LIDAC communities.

A list of all LIDAC census tracts affected by this proposal is included as an attachment to this application. Full-page maps of each individual Coalition state and their top-20 industrial emitters is also provided in the attachment.



The Coalition states will assess, quantify, and report a more thorough analysis of associated community benefits based on actual data collected during implementation. The Coalition states will track the deployment of innovative industrial measures in and near identified LIDAC census tracts to quantify

reduction in GHG emissions and co-pollutant emissions and other community benefits. The Coalition partners will include results of these assessments in semi-annual reports to the EPA and make the information publicly available.

b. Community Engagement to Date and Looking Forward

Past Engagement efforts

Each Coalition state performed extensive community outreach, including to LIDACs, during development of their PCAPs that, in turn, resulted in this coalition application. Over the course of the last several months, coalition members have intentionally and meaningfully engaged a wide swath of communities across their respective states, with a specific focus on centering the voices and experiences of LIDAC community members.

These outreach efforts included:

- i. Hosting multiple stakeholder meetings, including virtual and in-person presentations and workshops to elevate the perspectives and lived experiences of LIDAC community members. Several of the in-person meetings held across the coalition states were focused on areas that would be easily accessible to LIDAC community members. Information was presented in an accessible manner to enhance opportunities for engagement. These meetings helped to:
 - Provide greater insight into the barriers LIDAC communities face in accessing and benefiting from climate and clean energy strategies.
 - Inform the development and selection of priority reduction measures.
 - Educate, inform, and excite communities about the opportunities available through CPRG funding.
 - Form and strengthen relationships with nongovernmental organizations (NGOs) and community-based organizations serving LIDAC residents across each state.
 - Center benefits for LIDAC communities as a key desired outcome for any measure incorporated into the CPRG application.
- ii. Developing and distributing community surveys to allow expanded access for commentary and feedback.
 - Information gathered from these public surveys helped to directly inform the development of the respective state's CPRG application.
- iii. Creating online platforms for individuals from various communities to easily and accessibly provide feedback that could then be used to inform the development of the application. Links to the online platform were distributed to key stakeholders proximate to LIDAC community members.
- iv. Partnering directly with municipalities, NGOs and other community-based organizations where relationships already existed to enhance awareness of engagement opportunities.
- v. Intentionally engaging Tribal Nations and other communities historically excluded from key decision-making conversations.
 - Multiple states consulted and strengthened key partnerships with leaders and officials from federally recognized Tribal Nations across their respective states.

Specific details of each coalition member's community engagement leading up to this application is contained in their respective PCAP plans referenced in Table 4 above.

Future Engagement efforts

Each coalition member will allocate time and staff resources to continue meaningful engagement efforts with community members and other stakeholders leading up to and during the program, leveraging existing channels of stakeholder engagement. These engagement efforts will be aimed at increasing education about the program, gathering and incorporating input from LIDAC communities and other stakeholders into the program, and ensuring community engagement efforts become common practice.

The Coalition states will engage communities:

vi. **Ahead of the launch of the program:**

- State agency officials across the coalition will work with community members, leaders, and organizations in their respective states to host in-person and virtual town hall meetings prior to launching the program to help inform residents of the program, its potential benefits, and the opportunities that exist for ongoing collaboration. Locations and timing for these meetings will intentionally take accessibility for LIDAC community members into account. Officials will work to incorporate feedback from these meetings into the final details of the program.
- Coalition members will proactively partner with tribal officials, municipalities and NGOs to deepen engagement across the state, with a particular focus on LIDAC communities.
- States will work collaboratively to develop eligibility criteria for prospective grantees that intentionally incorporates community outreach as a key component for a successful grant application, helping to ensure sites applying for funds proactively engage their surrounding community.

vii. **During the program:**

- Each state will provide annual, public-facing updates in various, accessible formats to share progress from the prior year. These updates will include information about selected projects, siting locations, projected energy and emissions reductions, and anticipated benefits for the surrounding community.
- States will host an annual series of (virtual/in-person) town hall meetings with participating grantees to allow community members to ask questions, gain understanding and provide additional insight and feedback to help further refine programming implementation for the following year.
- Coalition states will convene regularly to assess outreach efforts, compare strategies, and strengthen meaningful engagement practices to enhance accessibility and incorporate various linguistic, cultural, institutional, and geographic perspectives.

In addition to these outreach efforts, the program itself is designed to maximize benefits to LIDAC communities through a challenge grant criterion that will give extra points for projects proposed in LIDAC communities.

5. JOB QUALITY

The Midwest Industrial Decarbonization Challenge will support good quality, family-sustaining jobs, including union jobs, at existing industrial facilities in Illinois, Michigan, Minnesota, Ohio, and Wisconsin by bringing new investment at these facilities that will make these facilities more efficient and therefore more competitive. As the world moves to decarbonize across the economy, the challenge grant program will motivate industrial partners to take steps to future-proof their facilities, positioning these facilities

to compete in a low-carbon economy, thereby preserving quality jobs for workers in Coalition states. Because Davis-Bacon applies to CPRG funded projects, all projects under the challenge grant component must meet or exceed the prevailing wage requirements of Davis-Bacon. As such, the Midwest Industrial Decarbonization Challenge is wholly consistent with the Biden Administration's Roadmap to Support Good Jobs.

As part of the Administration's Roadmap to Support Jobs, DOE expanded its support of the Industrial Assessment Centers, which according to the White House,

[increase] pathways for workers into high-quality clean energy jobs and [support] small and medium-sized American manufacturers. The IAC Program will form new partnerships with community colleges, trade schools, and union training programs, offering hands-on experience for engineers-in-training while helping manufacturers save energy, reduce costs, increase productivity, and boost competitiveness.⁷

The Midwest Industrial Decarbonization Challenge will likewise bring additional support to IACs in the region focused on projects to decarbonize and innovate at the region's larger industrial and manufacturing facilities, providing a place for workers coming through these important pipelines to work. The IACs are located at universities and employ students who assist in carrying out IAC work, giving them important experience that the students bring with them to jobs at facilities in the region. The proposal will therefore boost the training efforts of the IACs as they in turn help manufacturers "save energy, reduce costs, increase productivity and boost competitiveness."

6. PROGRAMMATIC CAPABILITY AND PAST PERFORMANCE

a. Programmatic Capability of Coalition Lead, Members, and Partners

The Coalition Lead, EGLE, is the principal environmental agency and energy agency of the State of Michigan with decades of experience working with industry in the state to reduce the environmental impacts associated with industrial operations. The proposed Midwest Industrial Decarbonization Challenge fits squarely in EGLE's expert competencies. EGLE has established expertise in key areas relevant to carrying out the responsibilities of this grant application, including with: (1) the measurement, monitoring and use of emissions information from industrial facilities; (2) selection and installation of pollution abatement equipment and fuel switching and other changes to industrial processes to reduce pollution; (3) inspection and verification of environmental results at industrial facilities; and (4) the administration of grant programs to achieve environmental goals. Each of the other member agencies in the Coalition are similarly established to carry out the environmental regulatory goals of their states and have significant experience working closely with industry in their states to improve environmental performance and measuring and tracking environmental performance at industrial facilities.

In addition to the extensive experience Coalition members bring working with industrial facilities in their states, the Midwest Industrial Decarbonization Challenge will enlist the partnership of the UIC's Energy Resources Center (ERC) to provide technical assistance and to work with Coalition members to

⁷ See *Biden-Harris Administration Roadmap to Support Good Jobs*, May 16, 2023, available at <https://www.whitehouse.gov/briefing-room/statements-releases/2023/05/16/biden-harris-administration-roadmap-to-support-good-jobs/>.

administer the challenge grant component of the program. The UIC's ERC already serves as the Technical Assistance Program (TAP) for the DOE's industrial onsite technical assistance program for the Midwest and Central regions of the country.⁸ In this role, the UIC's ERC interacts with industrial partners in the region to evaluate measures that can improve efficiency and lower costs. This experience lines up directly with the UIC's role helping to carry out both the predevelopment and challenge grant components of the Midwest Industrial Decarbonization Challenge. Working closely with the UIC will be the IACs in each member state.

Technical assistance for the program will also come from the DOE Industrial Assessment Centers (IACs) through the region. The IACs at the University of Dayton, Ohio; Michigan State University; University of Illinois, Chicago; and the University of Wisconsin, Milwaukee. Each of the IACs is already working to provide a limited number of industrial assessments in their states under DOE's IAC program.

b. Past Performance under EPA Grants

Michigan and all of the Coalition member states have successfully implemented other federal grants within their jurisdictions. Federally funded assistance agreements that the Coalition Lead is performing or has performed within the last three years include:

Leaking Underground Storage Tank Trust Fund (LUST)

- i. Program Assistance Agreement Number: (Cooperative Agreement #) LS-97534216
- ii. Funding Agency: EPA
- iii. Assistance Listing Number (e.g., CFDA number): 66.805
- iv. Description: The LUST grant is an ongoing, 2-year grant from the EPA that supports EGLE's administration of the LUST program. It provides funds to ensure the appropriate investigation and cleanup of petroleum release sites from leaking underground storage tanks for the protection of human health and the environment.
- v. Funding Agency Contact: Ethel Crisp, 312-353-1442, crisp.ethel@epa.gov
- vi. Status: The LUST grant is a two-year grant to fund EGLE's implementation of the LUST program. EGLE uses the funds for personnel and some contractual expenses and reports to the EPA biannually on various program metrics.
- vii. Reporting History: EGLE's Remediation and Redevelopment Division (RRD) biannual reports to the EPA about progress toward achieving the expected outputs and outcomes, challenges to meeting expected outputs and outcomes during the reporting period, and strategies to address such challenges.

Section 106 Monitoring Initiative

- i. Program Assistance Agreement Number: 01E01479-0
- ii. Funding Agency: EPA
- iii. Assistance Listing Number: 66.419
- iv. Description: This grant included a project titled, "Climate Change Monitoring Plan," which was intended to outline objectives and a potential sampling plan for the Great Lakes Watersheds Assessment, Restoration, and Management Section (GLWARMS) to measure impacts to biological stream communities from climate change.
- v. Funding Agency Contact: Ed Hammer, hammer.edward@epa.gov, 312-886-3019

⁸ The Midwest region covers all coalition member states Illinois, Michigan, Minnesota, Ohio, and Wisconsin. See <https://betterbuildingssolutioncenter.energy.gov/onsite-energy>.

- vi. Status: Complete. This project deliverable is complete and has led to GLWARMS developing a Quality Assurance Project Plan (QAPP) with a project start date of summer 2024. GLWARMS staff successfully performed site reconnaissance in March 2024 and plan to begin sampling when the QAPP is complete and permits are in place to install monitoring equipment (e.g., flow and temperature gages) on public property.
- vii. Reporting History: The EGLE's Water Resources Division (WRD) submitted annual reports to the EPA about progress toward achieving the expected outputs and outcomes, challenges to meeting expected outputs and outcomes during the reporting period, and strategies to address such challenges.

Wetland Program Development Grant - Shorelines and Shallows

- i. Program Assistance Agreement Number: CD00E02070
- ii. Funding Agency: EPA
- iii. Assistance Listing Number: 66.461
- iv. Description: Developing Tools to Protect and Restore Wetland Shorelines and Shallows
- v. Funding Agency Contact: Kristen Faulhaber, Faulhaber.kristen@epa.gov, 312-353-4378
- vi. Status: Complete. This project has significantly advanced Michigan's ability to address the challenges and improve protection of riparian wetlands on inland lakes statewide. This project has also led to improved understanding of the importance of these resources by landowners, shoreline professionals, and regulatory staff. Annual reports to EPA Region 5 included funded activities and explained progress towards achieving the expected environmental outputs and outcomes. The final report was submitted in April 2022.
- vii. Reporting History: EGLE's Water Resources Division (WRD) submitted annual reports to the EPA about progress toward achieving the expected outputs and outcomes, challenges to meeting expected outputs and outcomes during the reporting period, and strategies to address such challenges.

State Clean Diesel Grant Program

- i. Program Assistance Agreement Number: 00E66606
- ii. Funding Agency: EPA
- iii. Assistance Listing Number: 66.04
- iv. Description: Michigan Diesel Emission Reduction Strategy
- v. Funding Agency Contact: Julia Frusciante, frusciante.julia@epa.gov, 312-886-1478
- vi. Status: Complete.
- vii. Reporting History: EGLE's Materials Management Division (MMD) submitted annual reports to the EPA about progress toward achieving the expected outputs and outcomes, challenges to meeting expected outputs and outcomes during the reporting period, and strategies to address such challenges.

Superfund Management Assistance Cooperative Agreement

- i. Program Assistance Agreement Number: (Cooperative Agreement #) V-07E00776
- ii. Funding Agency: EPA
- iii. Assistance Listing Number: 66.802
- iv. Description: Superfund Management Assistance annual grant funding which is used to provide technical and community relations support for Federal lead projects in Michigan. Eligible activities under the grant include technical assistance, community relations assistance, legal support, and project coordination and review.
- v. Funding Agency Contact: Lindaa Ross, ross.lindaa@epa.gov, 312-353-6626

- vi. Status: Ongoing. The Superfund Management Assistance Grant is an annual funding allocation received from the EPA. The Management Assistance grant is awarded on a yearly basis and has a performance period of April 1 to March 31.
- vii. Reporting History: EGLE's RRD submits bi-annual progress reports to the EPA about state involved site progress and expenditures during a six-month reporting period.