



An Early Introduction to Data,
Structure + Solutions for the
Greenhouse Gas
Reduction Fund (GGRF)

Version 1.0
October 2024

Craftsman Technology Group
186 Lincoln Street, Suite 500
Boston, MA 02111
craftsmantech.com

Please Note

This white paper was compiled from a variety of sources: our team's decades of combined experience in systems, operations, and technology with Community Development Financial Institutions; our expertise in data, platforms, and integration; publicly available information provided by federal agencies. Craftsman Technology Group does not presume to speak on behalf of any agency, entity, client or other party. This guidance will change as the Environmental Protection Agency (EPA) finalizes reporting requirements for the Greenhouse Gas Reduction Fund (GGRF).

Introduction + Purpose

The Greenhouse Gas Reduction Fund (GGRF) is an unprecedented investment in size and scale that encompasses the need to understand financing solutions, community and program management, and environmental impacts.

As a result, the planning, design, delivery, reporting and support components of deploying GGRF will require a significant investment from both recipients and sub-recipients, in the form of human capital and technology.

In our nearly 10-year history, Craftsman Technology Group (CTG) has worked with a wide range of Community Development Financial Institutions (CDFIs) and other mission-oriented lenders, including several green banks and environmental CDFIs. We have helped these institutions build and/or enhance their technology solutions to track the financing they offer, related technical assistance, and their impact on the borrowers and the communities they serve.

Through this process we have seen the challenges these institutions face in implementing their programs, both human and technological, as well as helped them achieve their mission, through our services and support.

The purpose of this white paper is to provide our current understanding of what will be required to implement GGRF Transactions and Projects related to systems and processes - and to describe technology solutions.

Sections

1. Background

We will describe the remarkable progress with the GGRF over the past year – and note a few challenges inherent to the rollout of a major program on an expedited timeline.

2. Data Model

We will articulate the underlying data model – and surface key considerations.

3. Technology

We will provide recommendations for tools your organization can leverage in the near-term to meet reporting deadlines and describe long-term considerations.

4. About Us

We will describe the work of our firm – and how we can support your efforts in climate finance.



1. Background

A historic moment for climate financing

Climate change is real and presents an existential threat to our society. The size and complexity of this problem is massive. Fortunately, a mass-mobilization of capital is rising to - quite literally - meet the tide. With the passage of the Inflation Reduction Act in 2022, a \$27 billion investment was made to address the climate crisis with the creation of the Greenhouse Gas Reduction Fund (GGRF) and its components: the National Clean Investment Fund (NCIF), Clean Communities Investment Accelerator (CCIA) and Solar for All (SFA) programs.

Two years later the Environmental Protection Agency (EPA) has initiated this new federal program, selected partners to deploy the funds, and has developed a reporting framework for the distribution, oversight and administration of those funds.

This work is moving at an incredible pace - one not typically associated with the turning of the gears of government. But here we are. We are racing to prepare as an industry to build capacity and meet this moment.

At Craftsman, we live for systems, tools and processes. We see technology as a vehicle for social change and recognize that those organizations that can effectively harness it can amplify their impact and affect the change we hope to see in the world.

We have spent much of 2024 reviewing and responding to materials provided by the EPA related to systems, data and reporting needs. This dialogue is just beginning. As of October 2024, there are still significant questions to be resolved. Our purpose here is to provide current state analysis - to help organizations see where we are at this moment and what work remains as we build the systems needed to administer this funding.

In April 2024, we provided comments on the EPA's first Federal Register Notice. These comments provide a reasonable lens from which to view the first two quarters of 2024. Our comments reflected three larger themes.

Read our public comments to the EPA from April 2024 and September 2024 at:

craftsmantech.com/blog-news

1. Time is needed to build capacity – human and technology.

GGRF will be a new model - not a variation of the model employed by the US Treasury and the CDFI Fund. Understanding, embracing and operationalizing that model will take time and resources. It will require training on new concepts, new processes and new ways of measuring benefits.

Fortunately, the GGRF includes some funds allocated to help build capacity. The agency notes that it "will allow recipients to charge the grant awards for costs that support data reporting." It also states that "our preliminary estimate of start-up costs is \$146,440."

This is welcome news, of course. Too often we see funders forget to recognize the cost of administering funds, especially where the reporting burden could be considerable. We raised three significant questions as to this funding:

1. Can funds be applied beyond "start-up" costs? For example, might some funds be applied to cover staff salaries, software licenses or third-party services to augment existing systems during the time following the build?
2. Is the \$146,440 a fixed number? For example, might a larger organization apply for additional assistance as the reporting burden is greater. Or might a smaller organization that needs to overhaul larger pieces of technical infrastructure request greater assistance?
3. Were indirect costs associated with procurement factored into this number? For example, federal procurement requirements may add additional costs to engage third parties in the bidding or RFP process.

2. New environment and communal impact metrics created.

We have been especially interested to see the mechanisms to measure environmental and communal impact. We cover these in greater detail later in the paper, but it is apparent that the reporting burden for these metrics will be significant. Benefits measurements in terms of greenhouse gas emissions reductions are highly localized, therefore the reporting model will need to have a significant detail as to what is happening - and exactly where.

The focus on community impact related to Low Income/Disadvantaged Communities (LIDAC), quantity and quality of jobs generated/retained, and community engagement, while admirable, will also add additional reporting burden to recipients and subrecipients.

3. New templates, data dictionaries and reporting structures defined.

An impressive amount of detail has been created over the course of a few short months. The EPA has provided sample templates, a data dictionary, a data model and an array of reporting structures. Later in this paper we will describe these in detail. The challenge for the community will be to pivot from the understanding we have in October 2024 to meet the reporting deadlines established for GGRF programs in early 2025.

GGRF Timeline: Major Milestones

-  **Aug. 16, 2022: Inflation Reduction Act Passes**
President Biden signs the Inflation Reduction Act into law, including a \$27 billion investment to mobilize capital to address the climate crisis.
-  **Feb. 6, 2024: Public Comment Opens**
EPA publishes the first Federal Register notice with the public comment period open until April 8.
-  **Apr. 4, 2024: NCIF + CCIA Awardees**
National Clean Investment Fund (NCIF) and Clean Communities Investment Accelerator (CCIA) awardees announced.
-  **Apr. 22, 2024: Solar for All Awardees**
Solar for All (SFA) awardees announced.
-  **Aug. 26 – Sep. 25, 2024: ICR Published**
EPA publishes an information collection request (ICR) related to the GGRF Accomplishment Reporting; public comment period open until Sept. 25.
-  **Jan. 2025: NCIF Reporting Begins**
NCIF reporting through September 30, 2024 begins in January 2025.



Key Terminology

The following terminology is used throughout this White Paper. Eventually, a shared set of definitions will be agreed upon – but in lieu of time, we have tried to align around those terms most frequently used in public discourse, comments, and usage in the space.

- **Recipient, Subrecipient (also Awardee, Sub-Awardee).** These terms generally refer to an organization that receives GGRF funds from the EPA. A recipient directly receives funds from the EPA, and a subrecipient receives funds from a recipient. The pass-through funding model has important implications for how data/reporting aggregates back to the EPA. Where guidance is general to all involved, we use the term Recipient.
- **Transaction.** A Transaction is the transfer or allocation of funds from one organization to another, ultimately with the goal of financing environmental projects. A subrecipient or end beneficiary receives funds in the form of a Transaction. The Transaction is the fundamental basis for GGRF reporting.
- **Project.** The Project is the work being done to have an environmental impact, whether it relates to clean energy generation, construction or rehabilitation, green transportation, etc. A Project is funded by one or more Transactions.
- **Project Site.** The Project Site is the location of the Project. Projects have one or multiple Project Sites unless the Project is related to pre-development or market development in which case the Project Site may not yet exist.
- **Benefits.** A Benefit represents the specific impact in greenhouse gas reductions. If a Transaction is the financing source and the Project is the work being done, then the Benefit is the reduction in greenhouse gas emissions in each Project Site. The Benefits should roll up and aggregate consistently to reflect the total impact of the Transactions provided by each recipient.
- **LIDAC:** Low Income/Disadvantaged Community As noted earlier, location is incredibly important in the GGRF reporting framework. The EPA is particularly interested in whether the location is designated as a LIDAC as defined by their tools, such as the Climate and Economic Justice Screening Tool (CEJST) and EJScreen.

CTG would recommend reviewing the entire public comment we provided in September. We annotated almost every data point in the data dictionary with recommendations to clarify, consolidate, streamline, or otherwise modify to alleviate both the reporting burden and the effort to eventually aggregate data at the agency level.

A new vocabulary is being created around GGRF now – and it will be some time before terms settle and are universally applied.

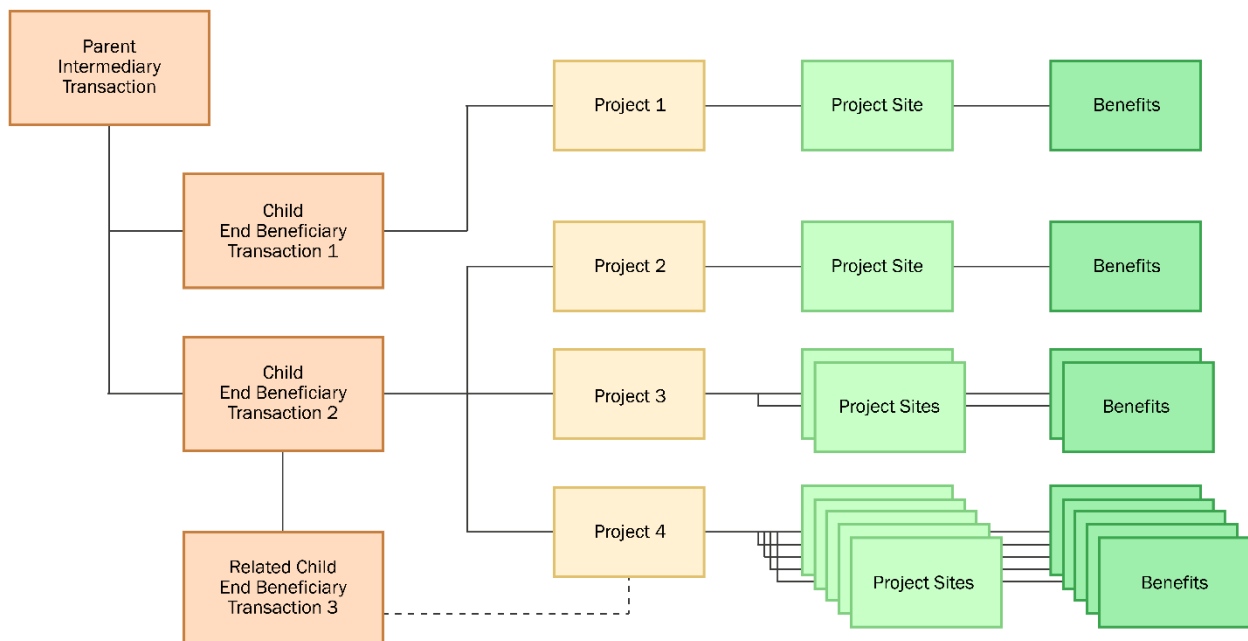
2. Data Model

A New Data Model Prioritizing Local Impact

As the data model has taken shape it is clear that this will be new, complex and prioritize knowing exactly where the impact was realized. The building blocks of the structure are Transactions, Projects, Project Sites and Benefits as shown in the diagram below:



Layers of complexity are introduced as we begin to look at the many potential relationships between Transactions, Projects, Project Sites and Benefits. In the diagram below, the Parent Intermediary Transaction indicates a Transaction between a Primary GGRF Recipient and a Subrecipient.



This diagram also indicates how the Subrecipient is providing financing for two End Beneficiaries for environmental projects. The first case (Child End Beneficiary Transaction 1) is straightforward; only 1 Project is involved, with 1 Project Site and 1 set of projected Benefits at time of financing origination / closing. However, the second case (Child End Beneficiary Transaction 2) is much more complicated, since this Transaction is financing 3 Projects, and both Projects 3 and 4 have multiple Project Sites, hence multiple Benefit records. Furthermore Project 4 required some Technical Assistance consulting (and consequent funding).

A few observations to note:

Many-to-many relationships will exist between Transactions and Projects

The many-to-many relationship between Transactions and Projects mean that one Transaction can be related to multiple Projects. Also, one Project can be related to multiple Transactions. This can be confusing. The goal is to attribute Benefits to specific Transactions, but as Transactions can come in many forms (direct loans, credit guarantees, securitization, etc.) potentially related to the same Project, it may be difficult to directly attribute Benefits to Transactions. A hierarchical structure with parent/child Transactions may be the solution.

Benefits are site-specific

We initially recommended a streamlined model where Benefits were a child record to the Project, thereby reducing the reporting burden. However, the EPA stated clearly that location is essential to defining Benefits; therefore, Benefits must be specific to the Project Site.

Ultimately, this may present challenges if a Project has a significant number of Project Sites. Each Project Site will need its own Benefit record.

A few points that will benefit from additional guidance:

Admin Transactions

Certain Transactions may be specific to administrative functions such as money allocated to salaries or infrastructure. There is a question as to how to report impact against such Transactions or whether such reporting is covered elsewhere, such as in the Semi-Annual Progress Report required by primary recipients where budget information is included.

Non-GGRF Project Financing

The GGRF requires a larger mobilization of other forms of private and public financing. Currently this reporting is included in specific fields in the Transaction file. However, with each Transaction potentially linked to multiple Projects, and each Project potentially related to multiple additional sources of non-GGRF financing, the amount of data that might need to fit within one field will be unwieldy.

LIDAC Attribution to Projects

How a Project is defined in relation to LIDAC is a question as a Project may span multiple Project Sites – and some sites may qualify as LIDAC while others may not. Is the Project considered LIDAC if (for example) three out of five Project Sites are LIDAC? Or if more than 50% of the Project funding goes into LIDACs?

Reporting File Templates

The EPA is expecting recipients to provide detailed reports regarding GGRF transactions, projects and impacts through four CSV (comma-separated values) file types, for which they have provided detailed templates. The types of files are described below:

1. **Transactions:** Transactions are on the top of the hierarchy, and they contain key information related to financial exchanges between the recipient / subrecipient and related counterparty. This is where key financial terms are captured, such as amounts, dates, purpose and type of financing, contract ID, and if a loan is involved, interest rate / type, origination fees, term (in months), etc.

Investment Tax Credits and subsidies are noted as well. There is a section that the EPA expects recipients to update regularly after a loan is closed which relates to unpaid principal balance, financial product status (whether it is active, paid off, sold, etc.) and delinquency.

The EPA is expecting three types of Transaction files, although currently the fields required for each are exactly the same:

- a. **Intermediaries:** Includes Transactions between Recipients and Subrecipients / financial intermediaries.
 - b. **End Beneficiaries:** Includes Transactions between Recipients / Subrecipients and entities that will use the funding to implement GGRF related projects (such as housing developers) or benefit from them (such as property owners).
 - c. **Administrative:** Includes administrative costs such as payroll, system development costs, program admin, etc.
2. **Projects:** The Project file includes fields related to project description, compliance (specifically related to Build America, Buy America and Davis-Bacon Acts), and community benefits (including whether it involves LIDACs). The project dimensions are thoroughly explored, from clean energy type to capacity and cost measures and baseline vs. alternative emissions.

Communal benefits capture how the community was served, number of households involved, and jobs created or retained (including pay rates).

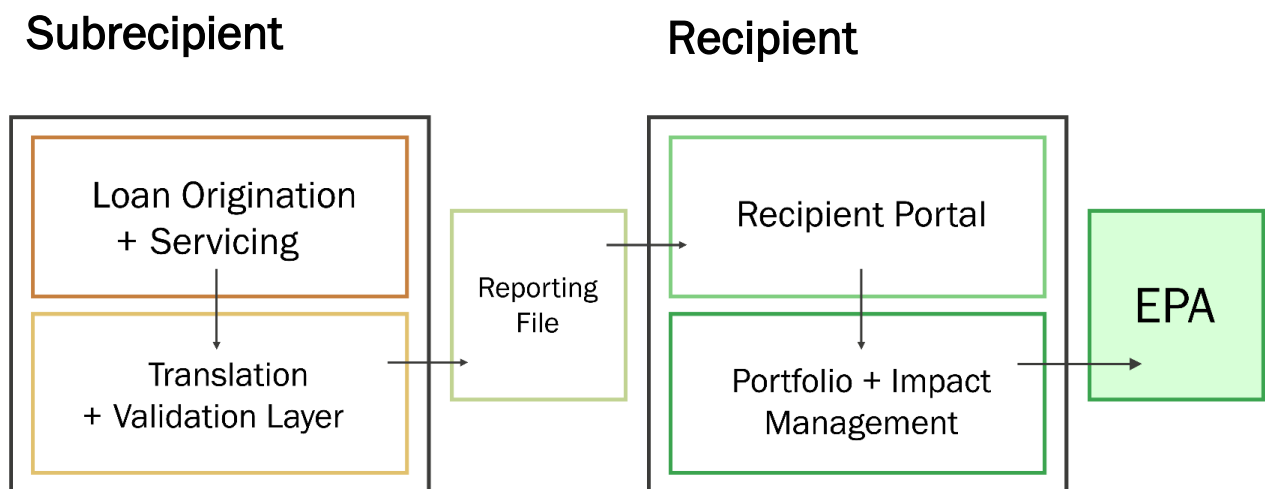


3. **Project Sites:** The Project Sites file provides address information related to the Project, as well as census information, latitude and longitude, and whether the site qualifies as LIDAC.
4. **Benefits:** The Benefits files indicate the expected impact on greenhouse gas emissions, specifically listing 18 of them, such as Carbon Dioxide, Hydrofluorocarbons, Nitrous Oxide, etc.

The files will be linked together via unique identifiers (IDs), both from the recipient and the EPA. For example, a Project will be linked to a Transaction by indicating the related Transaction ID on the Project record. Similarly, a Project Site will be linked to a Project by including the related Project ID on the Project site record.

Recipient + Subrecipient Reporting

Each subrecipient will need to be able to generate each of the 4 files. Once validated, we expect they will need to be transferred to the recipient. The recipient will then aggregate, validate and pass the files on to the EPA as pictured below.



3. Technology

Enterprise CRM Approach

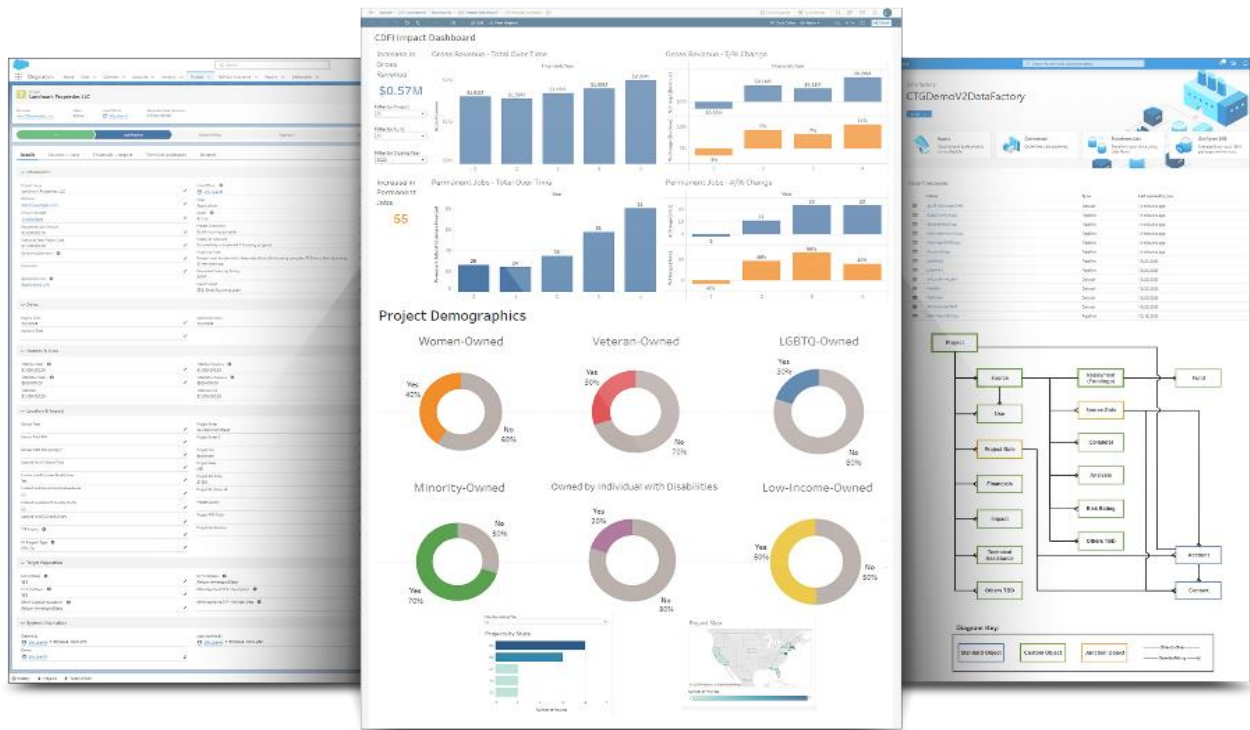
Every CDFI has some version of CRM - or Customer Relationship Management - technology. For some this is built around an Enterprise CRM platform such as Salesforce with multiple integrated peripheral tools. For others, this may be a contact management database and a suite of disparate applications or spreadsheets used for specific functions, such as servicing, loan origination or risk analysis.

Regardless of where your organization is in this continuum, you will need to bring data together around the GGRF data model. This can be achieved using modern data warehousing software and enterprise integration tools that can be setup (at least in the short-term) quickly to meet the current moment.

To prepare for GGRF we recommend taking the following steps:

- **Establish a current state of systems and determine data gaps.** With a more decentralized systems approach, often organizations can meet staff, clients and other stakeholders where they are. However, we understand consolidating information from those systems can be cumbersome. We recommend "mapping" these systems to the proposed GGRF outputs to identify a "current state" around where the data model exists and uncover any gaps in data collection practices or systems. With the core systems, entities and data points mapped, we recommend identifying a flexible reporting solution, such as a business intelligence tool to visualize and validate the integration work to come.
- **Identify a consolidated data location and integration strategy.** We recommend identifying a singular repository for validated and transformed data to land. This may be as complex as a data warehouse or involve more declarative storage orchestration tools and typically one or more integration solutions. This will serve as the "storage" and "integration" layers, respectively - and will serve as the repository of the logic needed to ensure data coming from a disparate set of systems is validated and transformed appropriately.
- **Define the enterprise user experience.** This involves both how the enterprise will capture necessary information to facilitate GGRF reporting as well as how it will ultimately generate, validate and transform the information needed for GGRF reporting. This may be existing systems, forms or software or may require new solutions. We recommend identifying the users and roles responsible for both providing GGRF information as well as those validating and generating reports. These stakeholders should be deeply involved as collection and reporting tools are developed.





The Role of Business Intelligence

Business Intelligence, or “BI”, tools provide powerful data visualization tools – allowing your organization to see your impact. The power of compelling narrative cannot be overstated.

GGRF and other programs point to how BI, combined with the power of CRM and enterprise automation tools, can meet other needs of your organization.

While CRM and enterprise automation can provide a robust system for capture and validation, BI will marshal the disparate data sources together and provide insight and ultimately serve as the executive "front-end" to underlying processes.

The Role of Enterprise Integration Tools

The first step is to survey and organize your data and confirm you can capture, and store key data points related to the GGRF data model. From there, we can evaluate the range of advanced data tools.

For some organizations this will be a robust data warehouse that intersects with business applications across the enterprise and/or a bespoke set of integration and monitoring tools. For others this will mean using more declarative query tools that can organize and aggregate data beyond the limits inherent to spreadsheets and pivot tables.

Salesforce-Specific Guidance

We recognize that the CDFI community is not well-served by off-the-shelf solutions. The use case of the sector is too varied, the workflows too tailored to each organization, and software is too rigid to accommodate the variety. We see the Salesforce platform as the best path as it provides a powerful CRM platform while providing the flexibility to meet each organization's needs.

For organizations currently leveraging Salesforce, we believe adding GGRF to the environment will be relatively straightforward. In the adjacent diagram we point to the key custom objects and relationships that need to be created and established alongside standard objects.

A few key considerations:

- **Some level of transformation will be needed in Salesforce.** Capturing data across standard and custom objects is, of course, a pre-requisite. The challenge is likely to occur with the co-existence of GGRF funds with other lending activities on the platform. More than likely, new “flows” will need to be created on the platform to ensure the organization can still see aggregate data analysis across the entire portfolio – while still meeting the GGRF-specific reporting requirements.
- **Use of a Business Intelligence Tool.** Whether you elect to leverage Tableau for Salesforce, Microsoft's Power BI or some other tool, we strongly recommend having a BI tool in place. BI is often recognized for data visualization. While that is true here, we typically lean into BI's ability to connect data without having to transform it on the underlying platform used for management.
- **Lean into Craftsman's CDFI Accelerator.** For organizations only partially using Salesforce – or not yet using it for lending purposes, we strongly recommend looking at our CDFI Accelerator. It provides a common data model and a foundation for CDFIs from which launching new programs can be greatly simplified. It is not a Managed Package (e.g. software). It is a common set of configurations – a toolkit for CDFIs.

Find more information about Salesforce solutions at craftsmantech.com/cdfi.



High-Level Entity Relationship Diagram (ERD)

The following diagram represents a Salesforce Object Model with major intersection points needed for GGRF. Object and field detail will be available once final guidance has been issued by the EPA.

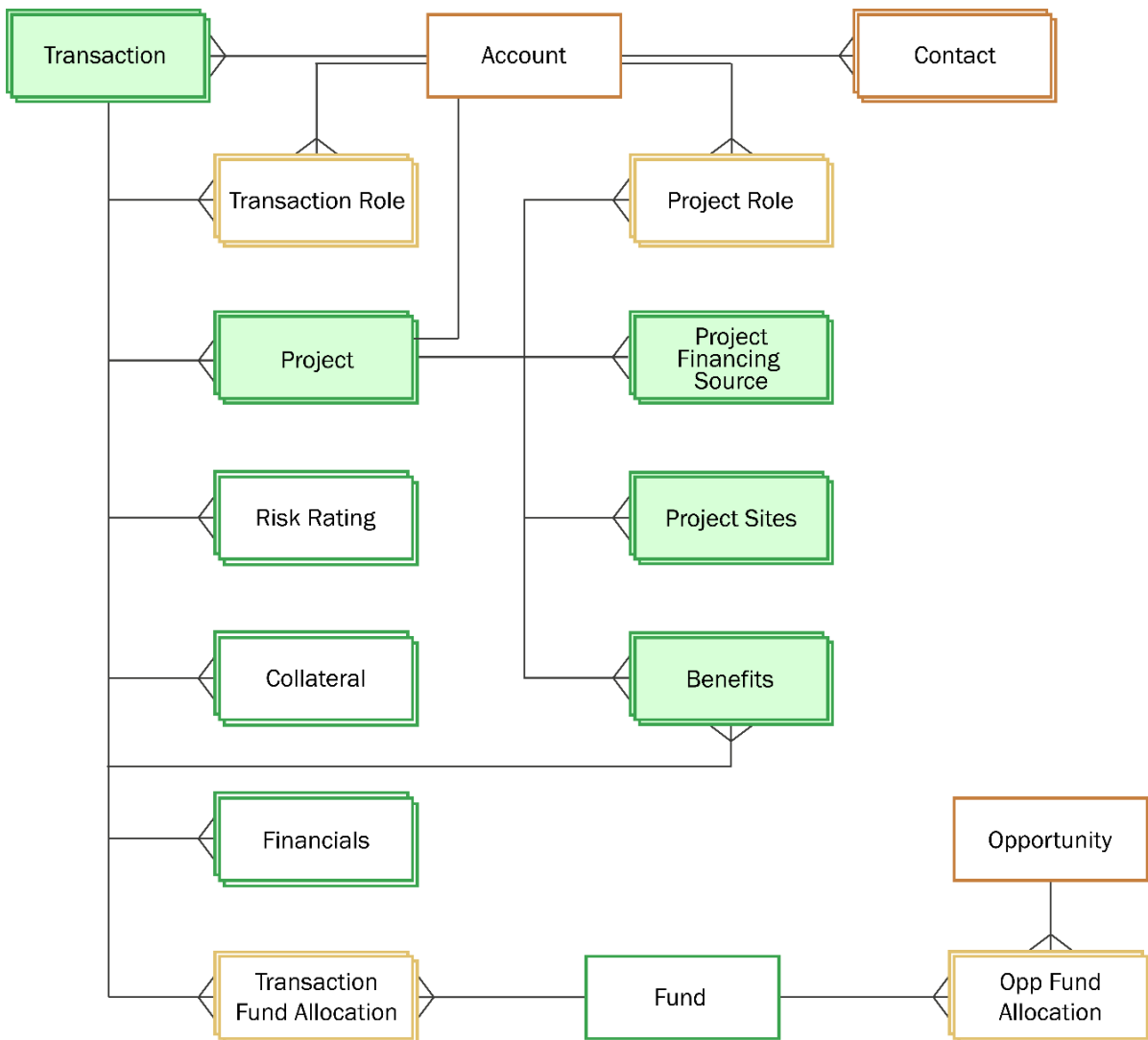
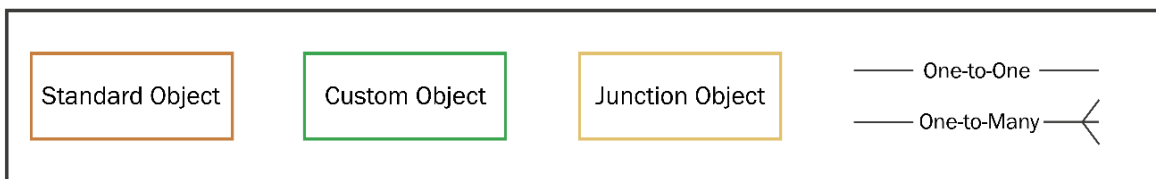
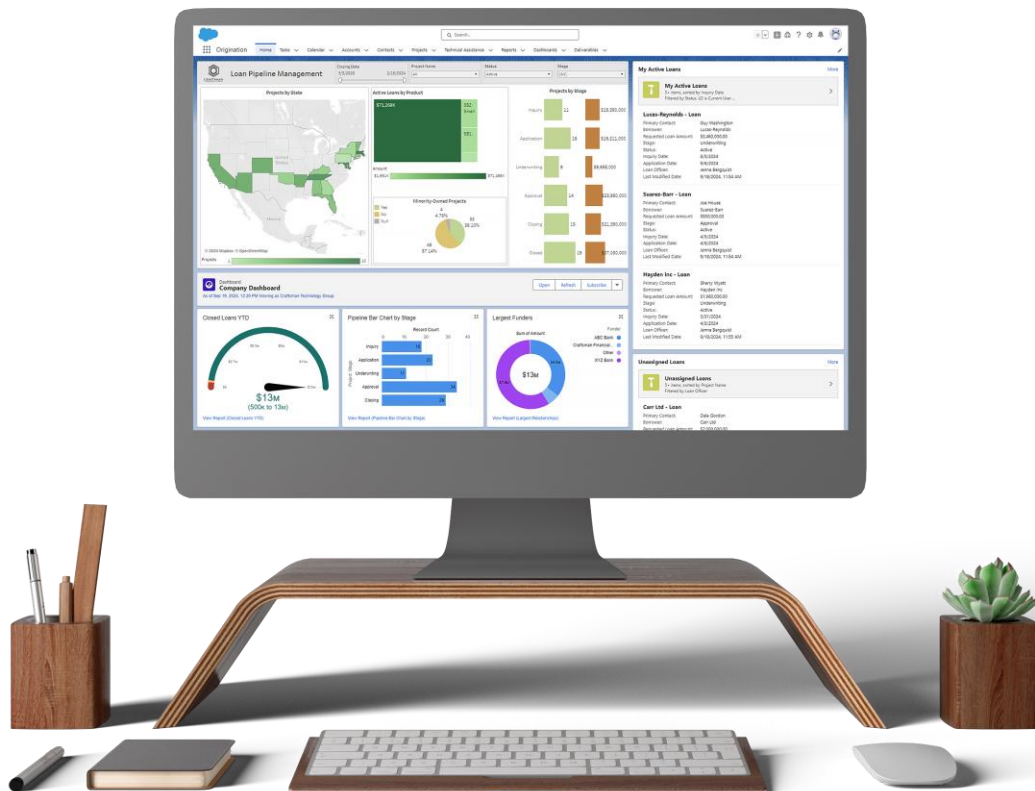


Diagram Key:



CDFI Accelerator



Our CDFI Accelerator combines the Salesforce platform with business intelligence and data warehouse technology to amplify your organization's impact, leveraging our deep experience with community development organizations.

Our core structure streamlines the loan origination process and related workflows, accelerating the time between the first point of contact with a potential client and a successful closing.

We help you tell your story through vivid dashboards and reports that illustrate impact and outcomes over time, by target market, and by funder.

- Salesforce CRM
- Origination + Pipeline Management
- Intake + Application Process
- Technical Assistance + Coaching
- Impact + Outcome Tracking
- Transaction Level Reports (TLR)
- Underwriting Management
- Tracking Sources of Funds
- Document Generation + Management
- Investment Management



Resources



Free 2-Hour Assessment

Our team of technology professionals will provide a 2-hour, CRM assessment and provide a report on areas for integration and/or process improvement.

To schedule, please visit:
craftsmantech.com/cdfi



Free CDFI Accelerator Demo

Our team will provide a tailored demonstration of our CDFI Accelerator. It leverages the power of the Salesforce platform with business intelligence tools and data warehousing.

To schedule, please visit:
craftsmantech.com/cdfi



Join Our CDFI Collaborative

We host quarterly meetups for CDFI's to discuss technology. While there is a heavy emphasis on the Salesforce Platform, the community often tackles larger discussions around data security, privacy, AI and much more.

To join, email us at
info@craftsmantech.com



Add Us to RFP Distribution

If you are considering issuing an RFP related to technology, professional services, data or analysis, please consider adding Craftsman Technology Group to your distribution list.

Our RFP email address is
info@craftsmantech.com



Follow Our LinkedIn Page

Follow us on LinkedIn at Craftsman Technology Group for ongoing updates about our company, our journey as a small business, and the work we do with other mission-driven organizations.

Find us at
[Craftsman Technology Group](#)

4. About Us

Enterprise Expertise, Small Business Culture

We provide enterprise-level skills and methodology while retaining a small business, relationship-focused approach.

We are committed to the development of our staff, transparency in our governance, and sustained positive impact in our communities.

We pair technical expertise with a deep understanding of the sector to build solutions that last.

We specialize in thoughtful systems design and implementation, data analysis and business intelligence, and Salesforce administration for nonprofit organizations.

Our work prioritizes outcomes over hours, root cause solutions over quick fixes, and engaged relationships above all else.

We strive to do good for our staff, good for our communities, and good for our world at large.

- *Deep CDFI expertise*
- *100+ community development clients*
- *Opportunity Finance Network Ally*
- *Extensive Managed Services*
- *Long-term partnerships*
- *Founded in 2015*



100% Mission-Driven Clients

Our work is with organizations in nonprofit, public, and social enterprise sectors.



100% Salaried Professionals

Our staff is a team of salaried, nonprofit technology professionals.



100% Employee Ownership

Our firm is a small business that has been proudly employee-owned since 2022.

We are uniquely positioned to enable your organization to deliver and report on climate finance.



info@craftsmantech.com • (617) 848-9006