

Facility Shared Services - Implementation Guide

E-Enterprise Facility Team

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# Revision Log

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# 1.0 Introduction

This Implementation Guide provides information to partners (co-regulator states, tribes, and local governments) who wish to implement shared facility services with the U.S. Environmental Protection Agency (EPA). The Facility Team expects that this document will evolve as additional partners implement shared facility services and as we apply lessons learned and updates to later versions of this document.

# 2.0 Overview of Facility Web Services

## 2.1 Shared Facility Services Benefits

Implementing shared services enables partners to share data in real-time, which can improve environmental outcomes by providing immediate access to the most up-to-date information in both a partner system and in EPA’s [Facility Registry Service](https://www.epa.gov/frs) (FRS). For example, maintaining accurate linkages between facility data can aid in enforcement and compliance by ensuring all interested parties are aware of facility name or owner changes. Use of shared facility services improves data quality across the enterprise, reduces inefficiency for EPA and partners, and ensures that the most up to date information is available to partners and EPA staff, members of the regulated community, and the public.

## 2.2 Services/API Description

The suite of Shared Facility Services includes two submit services and one query service.

* Submit to FRS: Enables real-time sharing of facility information between a partner system and EPA’s FRS. This facilitates an update in FRS upon the addition of a new record or edit of an existing record in a partner’s system.
* Submit to Partner: Enables real-time sharing of facility information between FRS and a partner’s system when FRS updates a record.
* Query FRS: Enables a partner to perform a real-time call of FRS so a partner can incorporate FRS data directly into their systems or make FRS data available to the public via their system. This can enhance data quality in a partner system and can help provide a more comprehensive answer to the “What’s Near Me?” question that many partners address through web queries of their applications. This facilitates presentation of a more comprehensive view of facilities of environmental interest across state, local, tribal, and federal regulatory programs.

The services include all data attributes available in the FRS data model, including general facility attributes such as name and address, location coordinates and metadata, SIC codes, NAICS codes, and sub-facility data attributes for air pollution control records.

## 2.3 Testing the Services

The services are available in a non-production environment so partners have the opportunity to test them. FRS data provided through the test version of the Query FRS and Submit to Partner services will reflect test (not production) data. FRS will apply any data provided by a partner through the test version of the Submit to FRS to test (not production) FRS data.

See the following section for links to the test and production versions of the services.

## 2.4 Services Description and Documentation

Use the links below to view relevant services documentation:

**Test Version:**

* Query: <https://frsquerypre-api.epa.gov>
* Submit: <https://frssubmitpre-api.epa.gov>

 **Production Version:**

* **Query:** <https://frsqueryprd-api.epa.gov>
* Submit: <https://frssubmitprd-api.epa.gov>

The links include the schemas to exchange data, definitions, instructions to demonstrate the services, and other important technical documentation.

### 2.4.1 Submit to FRS

The purpose of the Submit API is for a data source to initiate sending data to FRS. When a partner system adds a new facility or makes a change to an existing facility, the partner system will generate a payload and submit it to the Submit to FRS service. FRS will process the file and apply the new or updated record to FRS. This same process occurs now through the FACID data flow. The difference with the Submit API is that FRS applies changes in real time, whereas FACID updates and updates from EPA program systems occur on a batch schedule. FRS captures edits via logging tables and is able to identify changes made on each record. FRS can revert updates if requested. See Figure 2-1.



Figure 2-1: Submit to FRS workflow

### 2.4.2 Submit to Partner

When FRS makes a change to an existing FRS facility record related to a FRS partner facility record, FRS will generate a payload and submit it to the Submit to Partner service. The partner will process the file and apply the new or updated record to their system. Figure 2-2 illustrates this workflow.



Figure 2-2: Submit to Partner workflow

### 2.4.2 Query FRS

The Query FRS service enables a partner to retrieve data in FRS and provide the data to their system or a User Interface. This same process occurs now for FACID outbound data flows. The workflows illustrated below in Figures 2-3 and 2-4 are examples of how partners may choose to implement this service. For example, partners may choose to incorporate FRS search results into an existing search results page that queries a partner system, or implement the FRS query from within a partner application for use by partner staff. The extent of development a partner elects to perform within a web application for user interface is at each partner’s discretion.



Figure 2-3: Potential Workflow Using the Query FRS service in a Partner’s Public Facility Search.



Figure 2-4: Potential Workflow Using Query Services in Partner’s System.

# 3.0 Planning Considerations for Implementing Services

Each partner's systems and processes are different, so their specific implementations may vary. While the goal is for the services to be as standardized as possible, there are sets of decisions and tasks that partners may want to make before implementing the services. This section provides program and technical questions/considerations to aid partners as they determine how to implement services in a way that will best meet their needs.

When planning to utilize shared facility services, partners first need to determine which services they will implement. While services can exist in isolation, the Facility Team recommends that partners take advantage of each of the three available services. In particular, use of both submit services will enable real-time data sharing between partners, whereas implementing a single submit service will only provide data in one direction.

After a partner has determined which service(s) to implement, there are additional programmatic and technical considerations. By answering these questions, partners will be more prepared to perform the implementation steps outlined later in this document.

Partners who are interested in entering into a Service Level Agreement (SLA) or Service Level Commitment (SLC) with EPA may do so. Partners should contact the EPA Office of Mission Support contact in Section 6 to engage EPA in that process.

## 3.1 Programmatic Considerations

### 3.1.1 Submit to FRS

The Submit to FRS service enables a partner to submit real-time updates of facility data to EPA’s FRS. This is the equivalent of a partner using the FACID data flow to provide data to FRS.

1. Will the partner system provide information on all facilities within their system?

|  |  |  |
| --- | --- | --- |
| Considerations | A Partner May Decide They Will… | Suggested Approach |
| Many partners maintain data on state-only or other facilities not under EPA jurisdiction. | Not provide information on state-only facilities. | Determine how to identify state-only facilities within the partner system. |
| Many partners track facilities through an administrative process (e.g., application fee and processing) before that facility becomes “active” or regulated. | Not provide information unless a facility is “active.”  | Identify how to determine a facility’s status within the partner system. |

1. Will the partner system submit a change to any data field/attribute?

|  |  |  |
| --- | --- | --- |
| Considerations | A Partner May Decide They Will… | Suggested Approach |
| Partners may elect not to submit updates to FRS for all data attributes. | Provide updates on some, but not all, data attributes | Identify the data attributes that will trigger an update to FRS. |
| Partners may decide that only certain types of changes will warrant an update to FRS. | Provide updates on certain data attributes in certain circumstances. | Identify the data attributes and rules that will determine when to send an update to FRS. For example, a partner may not store all of the flags that are available in the service (e.g., small business indicator) and may elect not to include them in their submission. |

### 3.1.2 Submit to Partner

Through the Submit to Partner service, a partner will develop a service to update a partner data system. FRS will call this service when FRS updates facility data. Thus, the Submit to Partner service enables a partner system to receive changes to the FRS facility record in real time.

1. What will the partner system do with updates from FRS?

|  |  |  |
| --- | --- | --- |
| Considerations | A Partner May Decide They Will… | Suggested Approach |
| Some partners may want updates from FRS to go into a “queue” for manual review by staff; other partners may elect to apply the updates directly to the data in the partner system. | Apply all updates to data in their system. | Implement logic to apply updates directly to the data tables. |
| Apply updates to a “queue” so partners can manually review them before applying changes to the partner system data. | Determine where the “queue” will reside, who will review the potential changes and the business process for “accepting” or “rejecting” a change. |

### 3.1.3 Query FRS

The Query FRS service enables a real-time query of FRS.

1. How will the partner initiate the query service call?

|  |  |  |
| --- | --- | --- |
| Considerations | A Partner May Decide They Will… | Suggested Approach |
| Will a partner’s public website within a partner’s application initiate the query? | Incorporate a call to the Query FRS service as part of a public web site. | Identify the UI changes that the partner may need to make.Determine which data the partner will pass to the query service. |
| Incorporate a call to the Query FRS service as part of a partner system or application. | Identify the UI changes that the partner may need to make.Determine which data the partner will pass to the query service. |

1. How will the partner use the FRS query results?

|  |  |  |
| --- | --- | --- |
| Considerations | A Partner May Decide They Will… | Suggested Approach |
| Will the partner system return query results within a public web page or partner application? | Incorporate results on a public web page. | Identify the UI changes that the partner may need to make.Identify whether to add disclaimer or explanatory language to the UI.Determine which data attributes the partner system will display and how to render them. |
| Incorporate results in a partner system/application. | Identify the UI changes that the partner may need to make.Identify whether to add disclaimer or explanatory language to the UI.Determine which data the partner will pass to the query service. |

## 3.2 Technical Considerations

Some considerations may necessitate input from both programmatic and IT staff within the partner agency. The questions in this section provide future partners an idea of the kinds of considerations that may need discussion with technical staff.

1. Security
	1. What security does the partner have in place to allow FRS to make calls if the partner will implement the Submit to Partner service?
	2. If the partner will implement the Submit to Partner service, does the partner have any firewall rules that EPA needs to be aware of in order for FRS to submit data to the partner system?
2. Data
	1. For the services that the partner will implement, does the partner system contain all fields required by the services? Refer to the schema documentation (links in Section 2.4) for a list of required fields.
	2. Does the partner want to exchange data that is not currently included in the services?
3. Technology
	1. Does the partner have any technology or security constraints that could change how they implement services?

# 4.0 Implementing Shared Facility Services - Configuration

Partners will implement shared facility services through the Configuration process. We recognize that partners have varying types of technology and background knowledge of facility data exchanges. Some partners who have utilized services elsewhere in their architecture or who currently utilize the FACID flows over the Exchange Network may be able to stand up use of these services in a very short time frame. Other partners may need a longer planning period.

The following Configuration process includes some optional steps that many partners may not need. Figure 4-1 illustrates this process.

Figure 4-1: Shared facility services Configuration process. Required steps are in bold.

## 4.1 Exchange Information

During this optional Configuration phase, EPA and the partner will provide each other details on FRS and the partner system. This information will include an overview of security, data, and technology as well as programmatic information like business rules and data governance processes. This step may be most beneficial for partners who are unfamiliar with FRS or who have not exchanged facility data with EPA via FACID.

EPA and the partner will also examine the current version of the services. The purpose of this step is to determine whether the partner system contains the fields required by the service and to determine whether to expand the services to include additional data exchange elements. EPA and the partner will also evaluate whether there are discrepancies in data type or field length for data fields in the services.

EPA and partners can collaborate via conference call or email during the Exchange Information Phase.

## 4.2 Prepare Data and Security

An optional prerequisite to putting services into production is for the partner system to provide a data set to FRS prior to the initial submission. Having this data set ensures that FRS has processed partner data and has corresponding IDs to provide back to the partner, if desired, for them to incorporate into their data system. If a partner routinely supplies data to FRS (e.g., through FACID), then an updated data set would not be needed.

If the partner already has a dataset in FRS, they may wish to evaluate that dataset and work with EPA to determine how to manage the prior dataset before the initial submission with the services. For example, if the dataset is outdated, the partner may request that FRS archive it.

A required step for full implementation is for the partner to work with EPA to establish the appropriate security accounts and mechanisms. The services currently use NAAS authentication by validating the NAAS username and password. This is the same authentication used for FACID.

If a partner does not have a NAAS account:

1. Send an email to nodehelpdesk@epacdx.net to request an account. Provide the following information:
	1. Name
	2. Phone Number
	3. Email
	4. Organization
	5. Address
	6. Supervisor’s Name
	7. Supervisor’s Phone Number
	8. Supervisor’s Email
	9. Whether you want the provisioning option to use the FRS Query API (receive data from FRS into the partner system)
	10. Whether you want the provisioning option to use the FRS Submit API (provide data from partner system to FRS).

If a partner has a NAAS account and needs to provision it to use the API:

1. Send an email to nodehelpdesk@epacdx.net to request the needed account provisioning. Provide the following information:
	1. Name
	2. Organization
	3. NAAS ID
	4. Whether you want the provisioning option to use the FRS Query API (receive data from FRS into the partner system)
	5. Whether you want the provisioning option to use the FRS Submit API (provide data from partner system to FRS).

The CDX help desk will work with the EPA approver (the Office of Mission Support (OMS) contact listed in Section 6) to establish or update the NAAS account.

If the partner wishes to implement the Submit to Partner service, the partner will provide EPA their Internet Protocol (IP)address range so EPA can add it to an IP address whitelist that is part of the services. The partner will also provide EPA any security information EPA may need in order to meet the partner’s security requirements to call the Partner Shared Service.

* During a pilot, the partner used NAAS authentication to allow FRS to submit data to the Partner Submit Service.
* If a partner elects to use NAAS, EPA can provide assistance.
* If a partner elects to use a different authentication mechanism for their own services (Partner Submit), they might need to assign FRS the ability to call it.

The Facility Team expects that the Prepare Data and Security Phase can occur via email and/or conference call.

The Facility Team expects that the method of authentication will expand over time as other mechanisms become more widely available across E-Enterprise. As that occurs, EPA will update this document.

## 4.3 Implement Services

During this phase, EPA and the partner will complete development needed to implement the services and any necessary business logic updates the partner system.

### 4.3.1 Submit to FRS

The following table illustrates the actions that EPA and a partner will take to implement the Submit to FRS service. Once a partner implements this service, updates and additions made in a partner system, FRS will reflect those changes in real-time.

|  |  |
| --- | --- |
| EPA Actions | Partner Actions |
| * Make changes to the services, if needed, based on partner needs/requirements.
 | * Develop logic to generate a payload and provide it to the Submit to FRS service upon a facility add or edit.
 |

### 4.3.2 Submit to Partner

The following table illustrates the actions that EPA and a partner will take to implement the Submit to Partner service. When the partner builds this service and FRS implements the service call, updates and additions made in FRS to the FRS facility record, the partner system may reflect those changes in real-time.

|  |  |
| --- | --- |
| EPA Actions | Partner Actions |
| * Update FRS to call the Submit to Partner service upon an update to an FRS facility record of interest to the partner.
 | * Develop partner version of the Submit to Partner service.
* Develop logic to incorporate FRS data into partner system.
* Implement any UI changes (if needed).
* Implement any business process changes (if needed).
 |

### 4.3.3 Query FRS

The following table illustrates the actions that EPA and a partner will take to implement the Query FRS service. Once implemented, a partner can submit a query to FRS and receive real-time results.

|  |  |
| --- | --- |
| EPA Actions | Partner Actions |
| * Make changes to the services, if needed, based on partner needs/requirements.
 | * Develop logic to manage query results.
* Implement any UI changes (if needed).
* Implement any business process changes (if needed).
 |

It is difficult to estimate the amount of time and resources a partner will need to complete this development. It depends on which service or services a partner chooses to implement, the partner’s experience with implementing services, and the partners past experience using FACID to exchange facility data. As a rough approximation, EPA and a state partner completed a pilot implementation of all three services over a 12-week period. This included the initial service development; therefore, we anticipate that future implementation times will be shorter.

## 4.4 Evaluate Services in Test

This step is optional but recommended. It is a chance for EPA and the partner to implement the services in a test environment, evaluate them for success, and make any needed changes. If EPA and/or the partner identify needed changes, EPA and/or the partner will complete development and re-test in the test environment before moving on to the next step.

It is difficult to estimate the amount of time needed for this phase. During a previous pilot, EPA and a state partner completed this portion of the project within the 12-week window referenced above.

## 4.5 Deploy into Production

This is the final phase and involves the partner deploying the updated code into production to begin exchanging facility data with FRS. If EPA had to make changes to the services (as identified in the Evaluation step), EPA would also deploy those changes to production.

# 5.0 Future Services/Planned Future Enhancements

EPA expects to make incremental changes to the services as needed over time. However, we intend to make these changes ‘backwards-compatible’ so changes are transparent to current service users. EPA will utilize communication protocols and announcements in partnership with ECOS to communicate updates.

The initial three services represent the work completed during a previous pilot. During that effort, EPA and the pilot partner identified several items that, while important, have not yet been included due to time and resource constraints. Potential future changes include the following:

* Potential changes to the security approach. For example, EPA may use something other than NAAS authentication in the future.
* Move the APIs to an API Gateway. This will enable usage tracking and rate limiting or throttling as needed. When this happens, the URLs will not change and users will not see an impact.
* Implementation of new lookup services. Lookup services will enable a partner to obtain a set of standard data, such as a code set, from FRS. Implementing a lookup service could reduce submission errors and improve data quality.
* Expansion of data attributes in query and submit services (if the FRS data model expands to include additional attributes).
* In the future, there may be a need to address the correlation between a partner’s data that is specific to a regulatory program and the corresponding program records from the equivalent EPA system.

# 6.0 Contact Information

For additional information on shared facility services or to begin the Configuration process, please contact the Facility Team Quad Chairs:

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