

# Integrating Citizen Problem Reporter with Lucy

In this session, we'll cover the integration between Esri's Citizen Problem Reporter and Lucy GIS.

## Table of Contents

Highlights for version 2019 .....	2
Highlights for version 2019r2.....	2
Requirements.....	2
How the Integration Works .....	2
GIS to Lucy .....	2
Lucy to GIS .....	3
Setup/Configuration .....	3
Deploy the Citizen Problem Reporter Solution .....	3
Configure System Settings.....	3
Add GIS Services .....	4
Configure Layer Mappings.....	4
Sync Domains and Picklists.....	8
Crew Code and Problem Code .....	8
Status Code .....	9
Create GIS Tasks .....	9
GIS Task Options.....	10
Attachment Sync .....	10
Comment Sync .....	11

## Highlights for version 2019

- GIS tasks support the reverse geocode spatial relationship for Work Requests.
- GIS tasks can import Esri attachments into Lucy as documents.

## Highlights for version 2019r2

- GIS tasks can sync comments from a related table into the Work Request Comment Grid.
- Updates from Lucy to GIS can use the GIS Code from the Work Request Status Code picklist.

## Requirements

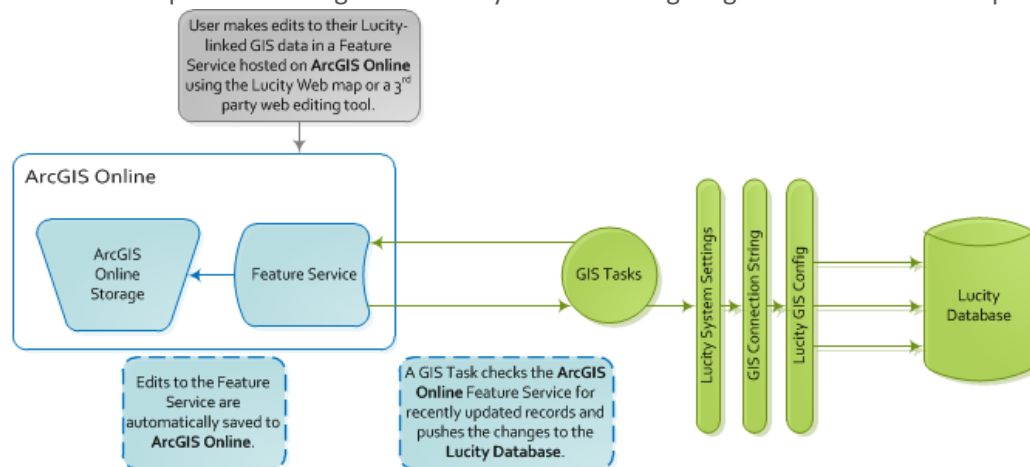
- ArcGIS Online subscription.
- ArcGIS Pro 2.2 or higher.
- Lucy 2018 or higher.
- Lucy Services must be installed and running.
- GIS Task Runner must be installed and running on the Lucy Services machine.

## How the Integration Works

Esri's Citizen Problem Reporter is a crowdsourcing application that allows the general public to submit non-emergency problem reports to local government organizations. When integrated with Lucy, these problem reports are imported into the Work Requests module, allowing the organization to leverage Lucy tools to track, manage, and resolve the problems. Since the Citizen Problem Reporter functions through published feature services, the integration is accomplished through existing Lucy processes that import features from feature services and send updates back to them.

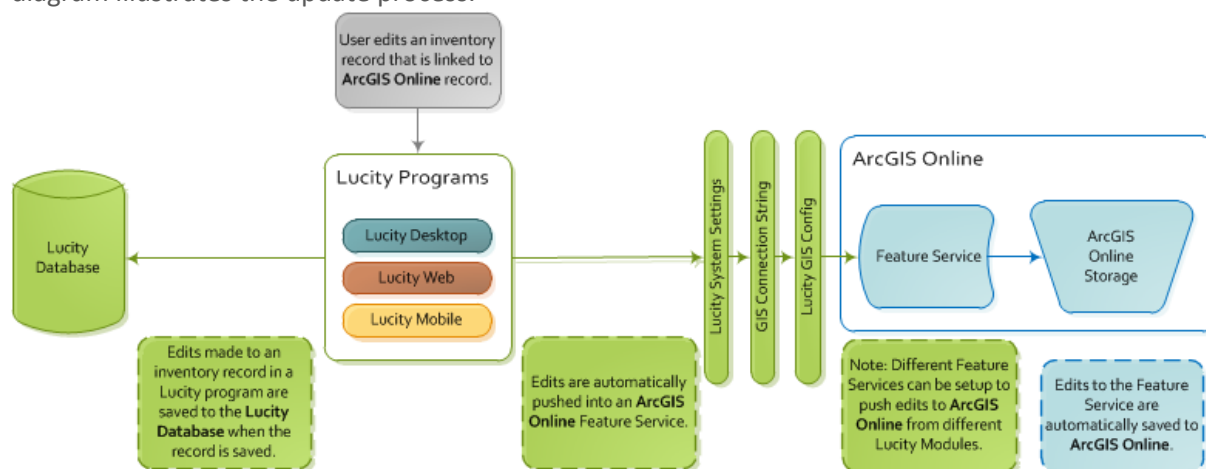
### GIS to Lucy

Citizen Problem Reports are imported into Lucy through scheduled GIS tasks, which run at regular intervals defined by the user. Each time a task runs, it queries the feature service for new or updated features and pulls the changes into Lucy. The following diagram illustrates the import process:



## Lucidity to GIS

Each time a GIS-enabled Lucity record is saved, an update to the feature service is triggered. This means that changes to the Work Request on the Lucity end are pushed back to the GIS problem report, allowing the general public to see updates on the problem's status. Specifically, the Lucity Request's status, assigned crew, end date, and resolution are sent back to the feature service. The following diagram illustrates the update process:



## Setup/Configuration

### Deploy the Citizen Problem Reporter Solution

The first step in configuring the Citizen Problem Reporter is to install the ArcGIS Solutions Deployment tool, which comes in the form of an ArcGIS Pro add-in. The documentation and download for the ArcGIS Solutions Deployment tool is available here:

<https://solutions.arcgis.com/shared/help/deployment-tool/>

Once the ArcGIS Solutions Deployment tool has been installed, you can use it to deploy the Citizen Problem Reporter solution. This will create the necessary feature services, maps, and applications that make up the solution. After deployment, you can also use the ArcGIS Solutions Deployment tool to modify the solution's fields and domains. The instructions to deploy the Citizen Problem Reporter can be found here:

<https://solutions.arcgis.com/local-government/help/citizen-problem-reporter/get-started/>

### Configure System Settings

There are a couple of Lucity System Settings that must be enabled for the Citizen Problem Reporter integration to work properly. These are set within **Lucity Web >> Admin Portal >> Settings >> System Settings**:

Setting Description	Setting Value	Setting Category
GIS/Lucity Edit Integration- Disable all updates to the geodatabase from Lucity	FALSE	GIS Edit Integration
Automatically push invalid request addresses to the general location field	TRUE	REST API

## Add GIS Services

There is one feature service for each problem category. Each of these needs to be added to the Lucy GIS Services list.

1. Open **Lucy Administration >> GIS >> GIS Services**.
2. Click **Add Map Service** to add a new record.

Name	Url	Order	Opacity	Base Map for Web?	Base Map for Mobile?	Has Feature Service?	User Auth	Require Logon?
LucyGIS_Stom	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_Stom/MapServer	3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
LucyGIS_Street	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_Street/MapServer	3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
LucyGIS_Traffic	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_Traffic/MapServer	3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
LucyGIS_ROW	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_ROW/MapServer	3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
LucyGIS_Water_Dist	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_Water_Dist/MapServer	3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
LucyGIS_Water_Raw	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_Water_Raw/MapServer	3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
LucyGIS_Water_Recycled	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_Water_Recycled/MapServer	3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
LucyGIS_GISTasks_Editable	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_GISTasks_Editable/MapServer	4		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>
LucyGIS_Parcels	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_Parcels/MapServer	1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	arcgis.mylucity.vie...	<input type="checkbox"/>
LucyGIS_Imagery	https://arcgis.mylucity.net/server/rest/services/LucyGIS_Imagery/ImageServer	0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
LucyGIS_LandBase	https://arcgis.mylucity.net/server/rest/services/LucyGIS_LandBase/MapServer	1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
LucyGIS_Redlining	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_Redlining/FeatureServer	4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
LucyGIS_All_Editable	https://arcgis.mylucity.net/server/rest/services/LucyGISDev/LucyGIS_All_Editable/MapServer	4		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Esr_WorldStreet	https://services.arcgis.com/arcgis/rest/services/World_Street_Map/MapServer	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Esr_WorldTopo	https://services.arcgis.com/arcgis/rest/services/World_Topo_Map/MapServer	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
CitizenReporter_AnimalProblems	https://services.arcgis.com/53PW7Eq3ERkspc/arcgis/rest/services/CitizenProblems_animal/FeatureServer			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AGOL_Generic	<input checked="" type="checkbox"/>

Buttons: Add Map Service..., Delete..., Test...  
Default Base Map for Web: Esri\_WorldStreet  
Default Base Map for Mobile: Esri\_WorldStreet  
Save...

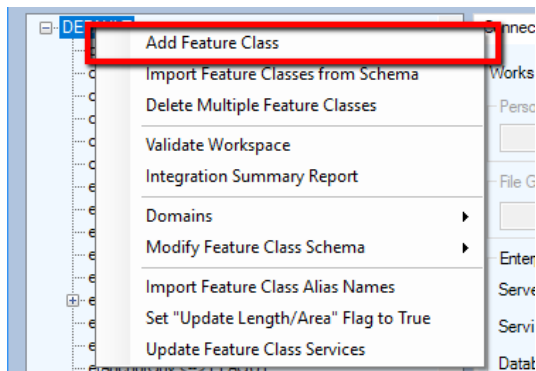
- **Name:** Unique name for the GIS service.
- **Url:** URL for the GIS service.
- **User Auth:** Credentials to the GIS service (if it is secured). This is configured within GIS >> Authentication Setup.
- **Require Logon?:** Check this box. This is required for any ArcGIS Online services.

3. Click **Save** to save the record.

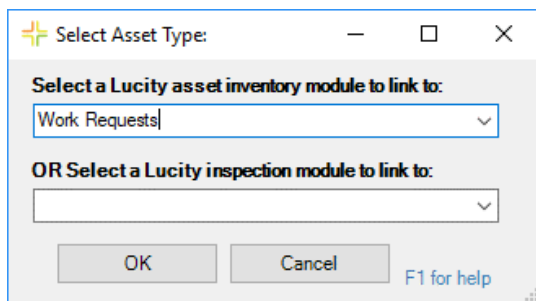
## Configure Layer Mappings

Each feature service has one layer which stores the problem reports. These need to be mapped to Lucy through the Geodatabase Configuration tool in ArcCatalog (or the GIS Configuration tool in Lucy Administration).

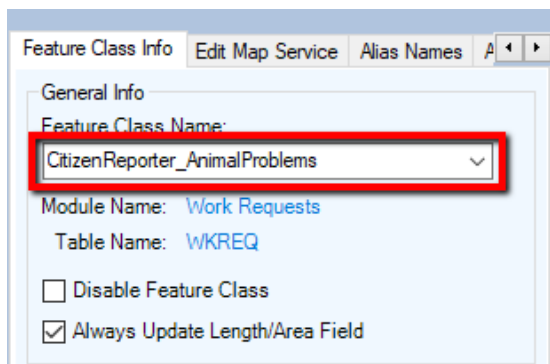
1. Open **ArcCatalog** >> **Lucity GIS Tools** >> **Geodatabase Configuration**.
2. Right-click the default workspace >> **Add Feature Class**.



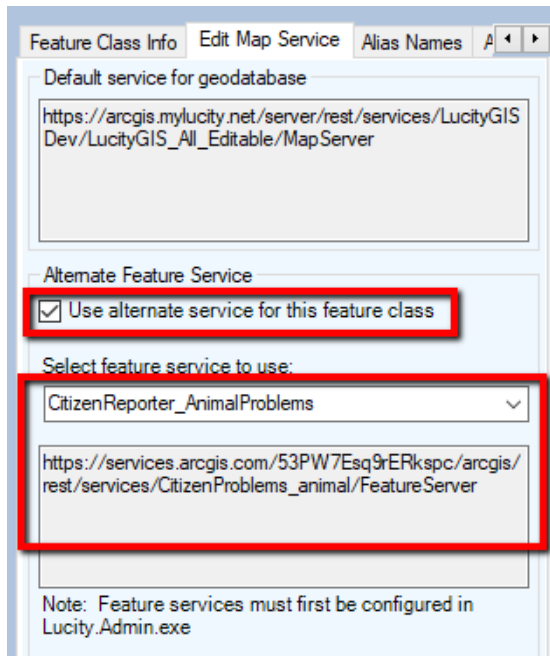
3. Choose **Work Requests** and click **OK**.



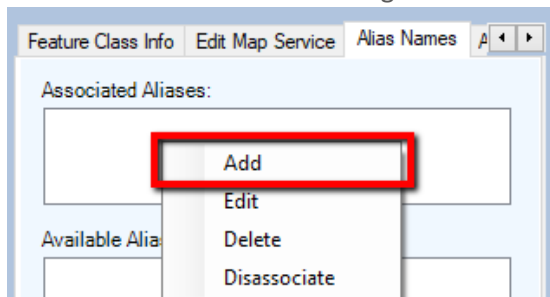
4. In the center pane, enter a unique name for the feature class. You will have to manually enter this since the layer will not show in the dropdown list.



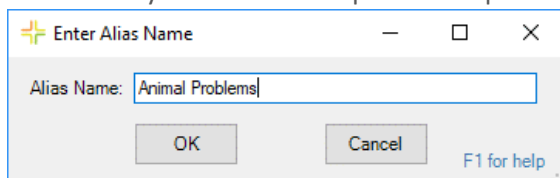
- Go to the **Edit Map Service** tab. Check **Use alternate service for this feature class** and choose the proper service from the dropdown list.



- Go to the **Alias Names** tab >> right-click under **Associated Aliases** >> **Add**.

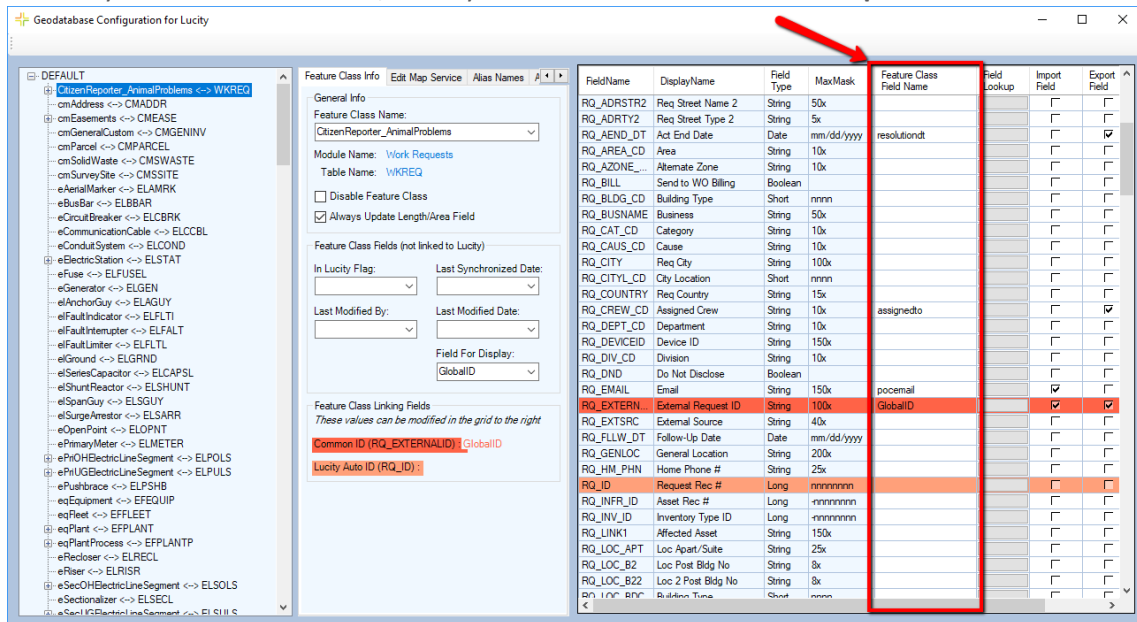


- Enter the layer name for the problem reports layer as it appears in the service and click **OK**.



*Note: You may have to change the layer name in GIS if it is not unique between all the Citizen Problem Reporter services. Lucity requires that all alias names be unique.*

- In the right-hand pane, populate field mappings in the field mapping grid. You will have to manually enter the field names, as they will not show in the **Field Lookup** list.



Here are the field mappings you should use:

Lucy Field Name	Lucy Display Name	Feature Class Field Name	Import Field	Export Field	Notes
RQ_AEND_DT	Act End Date	resolutiondt		X	
RQ_CREW_CD	Assigned Crew	assignedto		X	
RQ_EMAIL	Email	pocemail	X		
RQ_EXTERNALID	External Request ID	GlobalID	X	X	Common ID
RQ_LOC_STR	Loc Street Name	locdesc	X		Composite address (marked in green)
RQ_MEMO2	Request to Work Order	details	X		
RQ_NAME1	Name	pocfullname OR pocfirstname	X		
RQ_NAME2	Name (2)	poclastname	X		
RQ_PHONE	Phone #	pocphone	X		
RQ_PROB_CD	Problem	probtype	X		
RQ_STAT_CD	Status	status		X	

**Note:** *Import* and *Export* properties are set automatically.

- Click onto a different layer's node in the left-hand pane to save.

## Sync Domains and Picklists

Three of the Citizen Problem Reporter fields that map to Lucy are domain fields. Some special configuration is required for these, as they map to Lucy picklist fields. These include *assignedto* (Crew Code), *proptype* (Problem Code), and *status* (Status Code).

### Crew Code and Problem Code

The out-of-the box domain codes for *assignedto* and *proptype* are too long for Lucy, so they will need to be modified to fit the Lucy field mask.

- Domain updates can be done through:
  - ArcGIS Solutions Deployment tool.
  - ArcGIS Online interface.
- Example domain:

Domain Code	Description
AN01	Animal Abuse
AN02	Animal Bite
AN03	Barking or Noisy Dog
AN04	Dangerous Animal
AN05	Dead Animal
AN06	Pest Infestation
AN07	Rodent Activity
AN08	Other

Once the domain codes have been updated, you can add each code and description into Lucy through **Lucy Web >> Modules >> Work >> Administration >> Work Flow Setup**. Values from *assignedto* go into **Crew Setup** and values from *proptype* go into **Problem Setup**.

Open a Tab

The screenshot shows the Lucy Web interface with a 'Modules' menu on the right. The menu is organized into sections: 'Favorites', 'Menu', 'Recent', 'Open GIS View', and 'Modules'. The 'Modules' section is expanded, showing a list of modules. A red arrow points to the 'Problem Setup' and 'Crew Setup' options under the 'Work Flow Setup' section. The 'Recent' section shows 'Work Crew Setup', 'Work Problem Setup', and 'Water Pipes'. The 'Open GIS View' section shows 'Default', 'LucyMap\_Sewer', 'Trace', 'Water Map', and 'Water System'. A 'Cancel' button is visible at the bottom left.

Recent	Open GIS View
Work Crew Setup	Default
Work Problem Setup	LucyMap_Sewer
Water Pipes	Trace
	Water Map
	Water System

Cancel

**Note:** Problem types from Citizen Problem Reporter must be marked as **311 problems** in Lucy.



## Status Code

Lucity updates *status* with the following logic:

1. If Status Code = 1: *status* = "Received".
2. If Status Code > 950: *status* = "Completed".

*Note: Status Code > 950 also sets the **resolution** field with this format:*

*"Request #{Request number} completed on {date} at {time}"*.

3. If Status Code = {anything else}: *status* = "In Progress".

To override this logic, you can assign GIS Codes to Lucity picklist values through the ArcGIS Pro Domain Configuration tool (<http://help.lucity.com/webhelp/latest/gis/index.htm#43934.htm>), so that the GIS Code will be used instead of the above defaults:

Resolve Domain Discrepancies

**GIS Domain**

GIS Feature Class: Animal Problems  
GIS Field Name: status Field Type: String  
GIS Domain: ProblemStatus

Code	Description
Completed	Completed
Custom Status	Custom Status
In Progress	In Progress
Received	Received
Submitted	Submitted

>> Add value to Lucity >>  
Repopulate Lucity to match GIS  
<< Add value to GIS <<  
Repopulate GIS to match Lucity  
Close

**Lucity Picklist**

Lucity Module: Work Requests  
Lucity Field Name: RQ\_STAT\_CD Field Type: Numeric  
Lucity Picklist: StatusCode

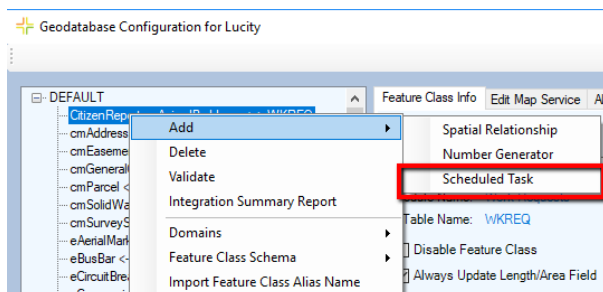
Code	Description	GIS Code *Req	Restricted
1	New Request		<input checked="" type="checkbox"/>
2	Assigned to WO		<input checked="" type="checkbox"/>
3	Under Review Process		<input type="checkbox"/>
10	On Hold		<input type="checkbox"/>
950	Custom Status	Custom Status	<input type="checkbox"/>
951	WO Cancelled		<input checked="" type="checkbox"/>
998	WO Completed		<input checked="" type="checkbox"/>
999	Completed		<input checked="" type="checkbox"/>

Apply Changes ☐ Show current values and record counts Apply Changes

*Note: Lucity requires that the **GIS Code** be unique, so you will only want to populate it for specific cases where the Lucity-to-GIS update functionality for the **status** field will be overridden. If you do not plan to override this logic, then leave the **GIS Code** blank.*

## Create GIS Tasks

The final step in configuring the Citizen Problem Reporter integration is to create the scheduled GIS tasks, which import the problem reports. To do this, right-click the layer's node in **Geodatabase Configuration** >> **Add** >> **Scheduled Task**.



## GIS Task Options

Begin configuring settings for the GIS task. You should set them like this:

- **Task Type:** Sync- GIS to Lucity.
- **Only process records modified since last run:** Check this box.
- **Last Edited DateTime Field:** Manually enter this field name. This field is part of Esri's editor tracking and is often *EditDate* or *last\_edited\_date*.
- **Insert record if it doesn't already exist:** Check this box.
- **Enable number generator for imports:** Leave this box unchecked.
- **Enable spatial relates for imports:** Check this box if you wish to configure a reverse geocode spatial relationship to insert addresses.
- **Update existing record:** Check this box if you wish to enable Attachment Sync and/or Comment Sync (see next sections for details).
- **Sync attachments:** See next section for details.
- **Units/Frequency:** This can be set to whatever works (ideally at least once per day).
- **Last run:** This must be populated. Check **Override** to set it.
- **Next run:** This must be populated. Click **Recalc** to set it.

The screenshot shows the 'Scheduled Tasks' configuration window. It has several sections: 'General Info' with 'Task Type' set to 'Sync- GIS to Lucity' and a 'Disabled' checkbox; 'Filter Options' with 'None (process all source records)' selected and a 'Where Clause' field; 'Options' with checkboxes for 'Only process records modified since last run' (checked), 'Insert record if it doesn't already exist' (checked), 'Update existing record' (checked), and 'Sync attachments' (checked); 'Scheduling Info' with 'Units' set to 5, 'Frequency' set to Minutes, 'Last run' and 'Next run' dates, and 'Override' checked. A 'Recalc' button is at the bottom right.

Once you have finished configuration for the task, click onto a different layer's node in the left-hand pane to save.

## Attachment Sync

As of Lucity 2019, GIS tasks support syncing Esri attachments into Lucity. It is recommended that this be enabled for the Citizen Problem Reporter integration, as the feature services will have attachments enabled by default.

These are the Attachment Sync options:

- **No Attachment Sync:** Attachments will be ignored by the GIS task.
- **Attachment Reference:** A link to the attachment will be added to the Request.
- **Attachment Copy:** The attachment will be uploaded to Lucity and then added to the Request.
- **Carry over to work order:** The synced attachment will be copied to any Work Orders created from the Request.

## Comment Sync

As of Lucity 2019r2, GIS tasks support syncing comments from a related table in the feature service into the Work Request's comment grid. There is no setup required for this on the Lucity end, as Work Request GIS tasks will automatically try to process comments.

Here's how Comment Sync works:

1. The layer's relationship classes are searched for a related table where the name contains "comment". The first table found is considered the comment table.
2. Comments are retrieved from the comment table. If **Only process records modified since last run** on the task is checked, then only new or updated comments will be retrieved. Otherwise, all comments will be retrieved.
3. Each comment record is processed. If the comment record includes any contact information (name, phone number, email), then it will be appended to the Lucity comment.
4. The Lucity Request is retrieved using the GlobalID and the comment is inserted into the Request's comment grid.

*Note: It is currently required that the **GlobalID** (which is also used as the Common ID for Lucity) be the linking field between the layer and the comment table for comment sync to work.*