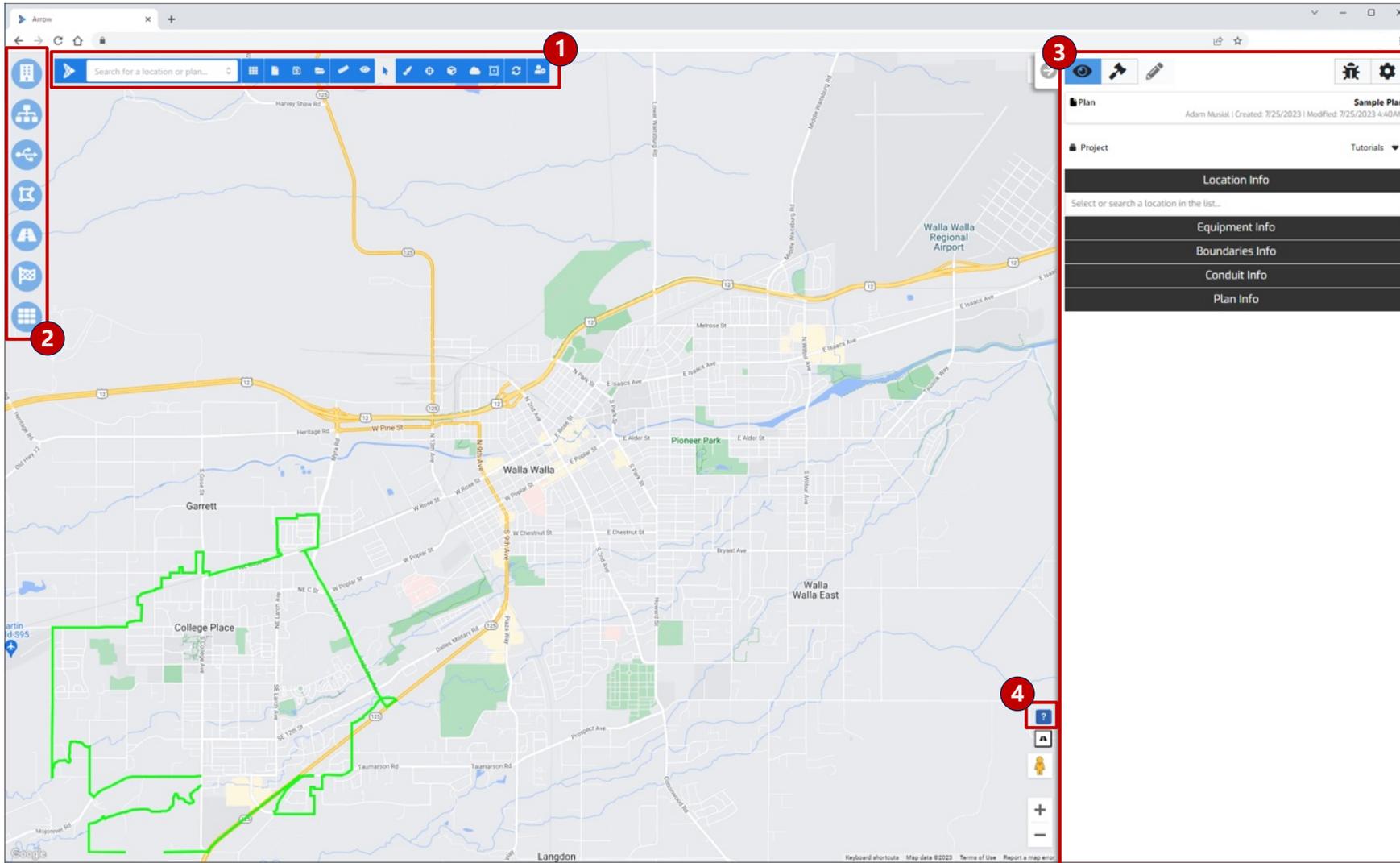

Arrow Platform

UI Elements and Data Visualization



Users interact with Arrow through controls located in three key areas of the screen: Header Bar, Visualizations Modal and the Analysis Panel



1. Header Bar –Displays shortcuts to useful UI tools (e.g., search), plans, and key settings

2. Visualization Modal – Controls which data layers and features are displayed on the map

3. Analysis Panel – Used for:

- Inspecting details of individual data layers (View Mode)
- Setting up new optimizations (Analysis Mode)
- Adjusting data and resource selection for individual plans (Settings)

4. Help Center – Opens up a panel with links to additional training, troubleshooting and support resources

Header Bar

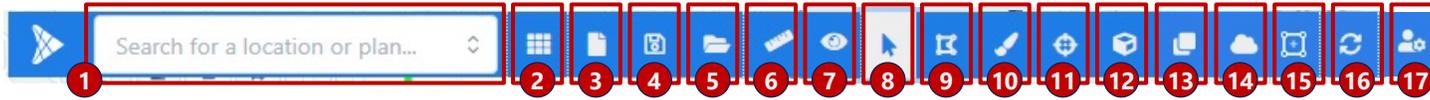
Visualization Modal

View Mode

Analysis Mode

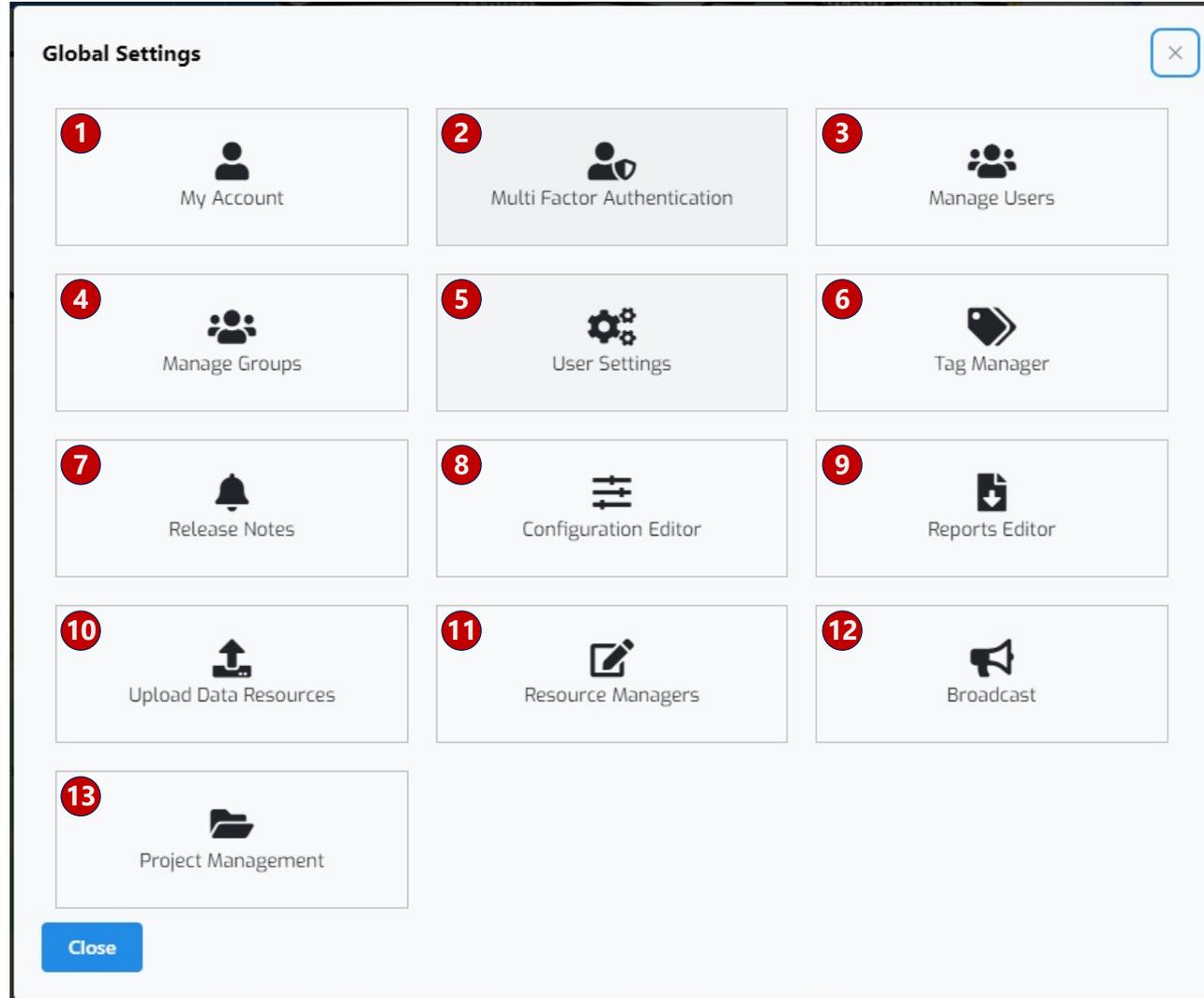
Settings

Header Bar displays shortcuts to plans, useful UI tools, and key user settings



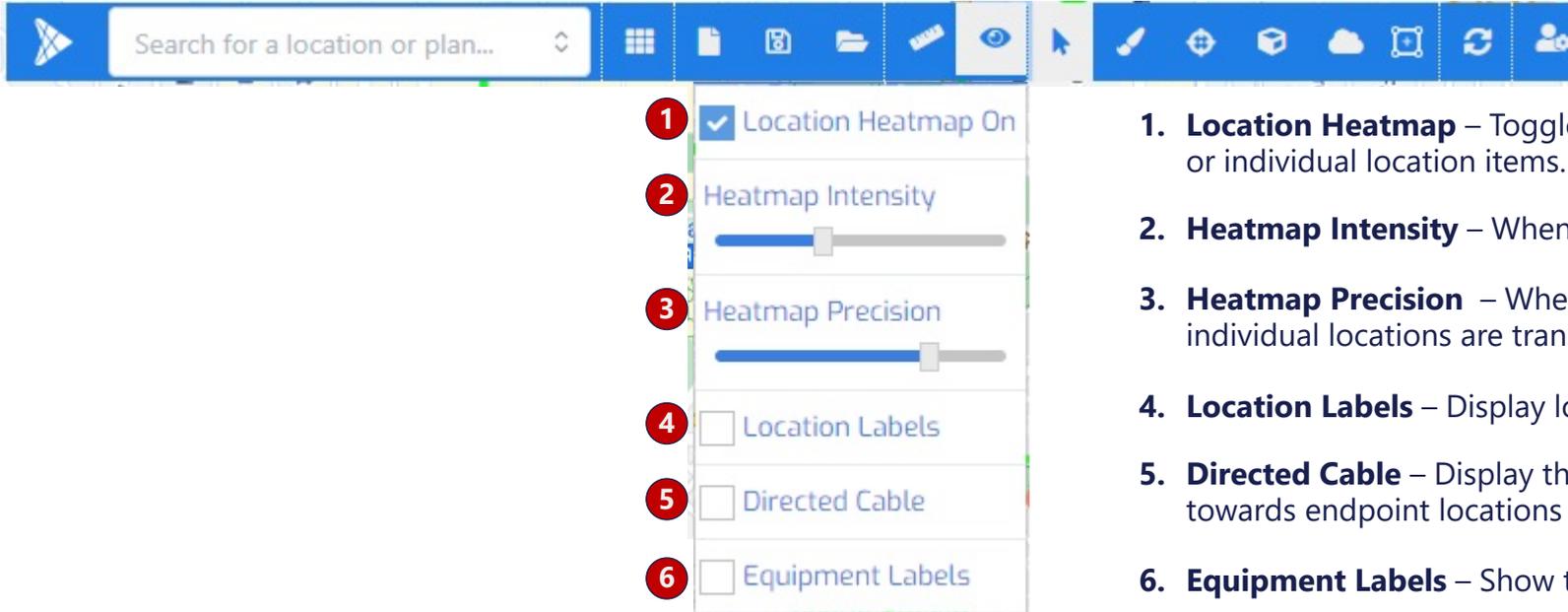
- 1. Search** – Global search box where users can search for saved plans, addresses and geographical coordinates. Users can toggle which categories are searched.
- 2. Global Settings** – Allows users and platform administrators manage key platform settings and permissions (*details on the following pages*)
- 3. Create New Plan**– Shortcut to New plan creation panel
- 4. Save Plan** – Saves the plan to make the analysis permanent
- 5. Open Existing Plan** – Opens existing plan
- 6. Ruler** – Measures distance between points on a map (straight line or along road segments)
- 7. View Settings** – Control how certain data features appear on the map (*details on the following pages*)
- 8. Selection Tool** – (*visible only inside Analysis Panel*) Locations selection tool
- 9. Multi-Selection Tool** – (*visible only in Analysis Mode*) Selects multiple locations or service areas for analysis by drawing a polygon on a map
- 10. Annotations** – Draws temporary lines or polygons on the map to track progress or illustrate an analysis
- 11. Coverage Boundary Calculator** – (*visible only in View Mode*) Calculates number of locations within specified distance from a point selected on a map. Distance is calculated along the road segments, not straight line.
- 12. Boundary Reports** – (*visible only in View Mode*) Opens Boundary Reports modal where user can download custom reports for their coverage boundaries
- 13. Copy Locations from Plan** – (*visible only inside a saved plan*) Enables you to copy selected locations from another plan. Note that you must ensure the new plan has the same location data layer selected from which you are copying.
- 14. RFP Plans** – Accesses the panel for submitting and retrieving RFP plans and reports (submitted through the panel or Arrow APIs)
- 15. Edit Plan Service Area** – (*visible only inside a saved plan*) Temporarily adjust the service area boundary (in the context of a saved plan), for example, to capture additional locations that are originally outside of the serving area
- 16. Refresh Tiles** – Refreshes map vector tiles
- 17. Account Settings** – Shortcut to user account settings and app logout

Global Settings allow users and administrators manage key platform settings and permissions



1. **My Account** – Change password
2. **Multi-Factor Authentication** – Manage MFA settings
3. **Manage Users** – [Administrators only] Manage users and their permissions
4. **Manage Groups** – [Administrators only] Manage groups and their permissions
5. **User Settings** – Set default Project template and map start location
6. **Tag Manager** – Manage plan tags
7. **Release Notes** – List recent app upgrades and enhancements
8. **Configuration Editor** – [Administrators only] Manage various aspects of UI display
9. **Reports Editor** – [Admin only] Manage reports available for download after the plan is run
10. **Data Upload** – Shortcut to Data Upload manager
11. **Resource Editor** – Shortcut to Resources manager
12. **Broadcast** – [Administrators only] message other Arrow users logged into the system (e.g., to announce upcoming downtime)
13. **Project Management** – Manage Project templates

View Settings control how certain data features appear on the map



1. **Location Heatmap** – Toggle between displaying location data as a heatmap or individual location items.
2. **Heatmap Intensity** – When heatmap is enabled, it controls its intensity
3. **Heatmap Precision** – When heatmap is enabled, it controls how precisely individual locations are transformed into the heatmap source
4. **Location Labels** – Display location labels on the map
5. **Directed Cable** – Display the direction of the cable, from Central Office towards endpoint locations
6. **Equipment Labels** – Show the site CLLI of each equipment on the map



Header Bar

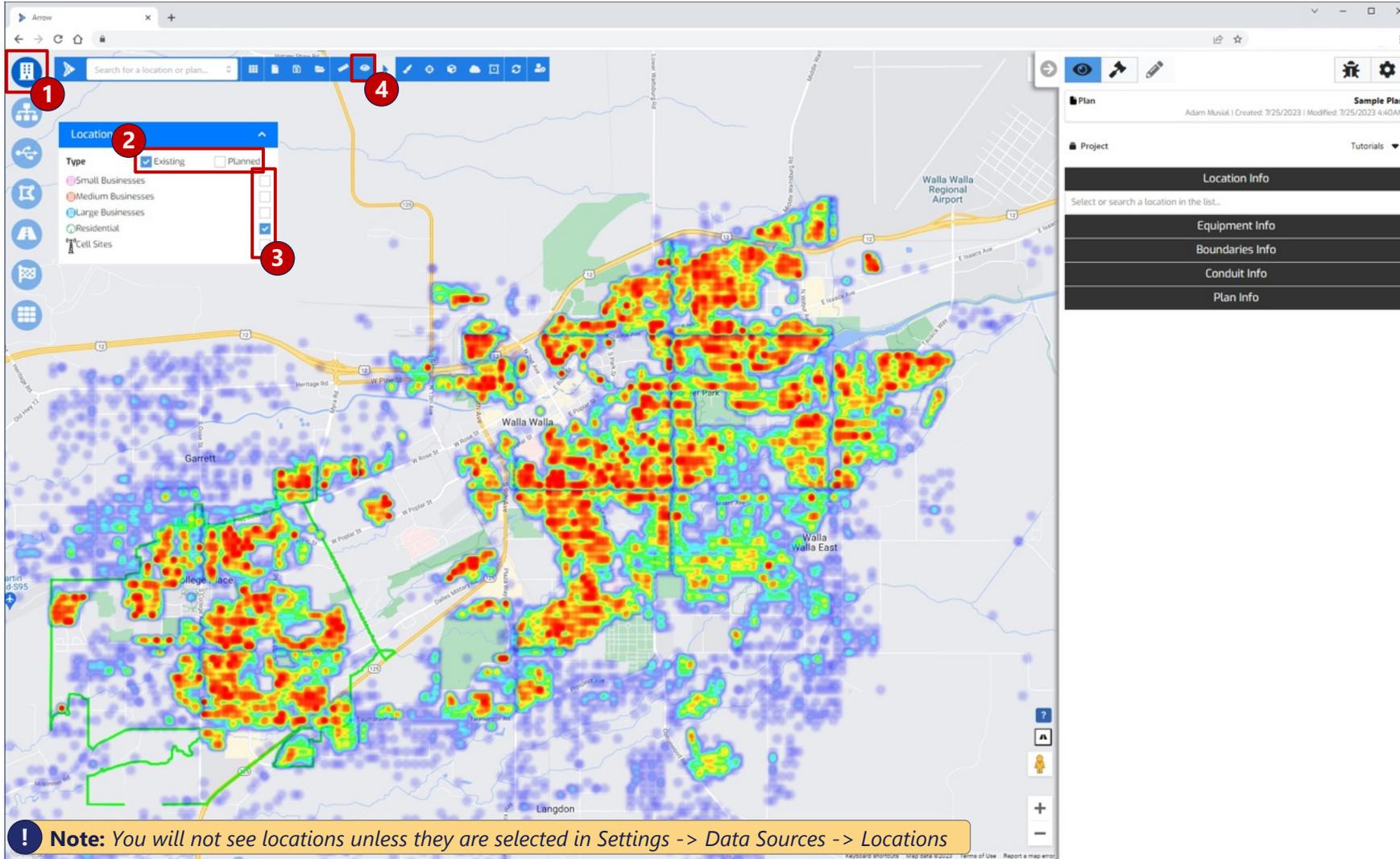
Visualization Modal

View Mode

Analysis Mode

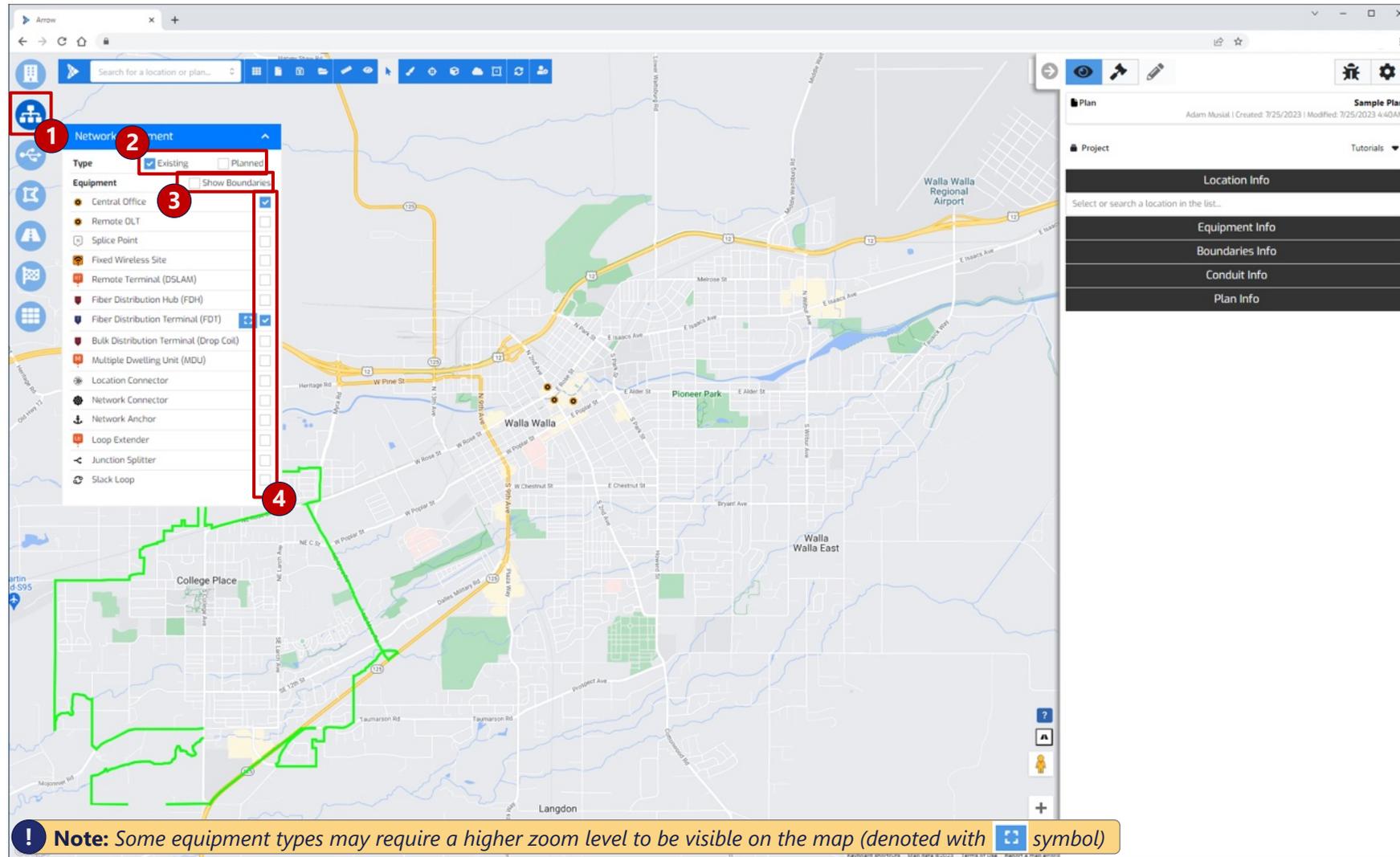
Settings

Locations modal is where a user can turn location categories on and off to visualize on the map



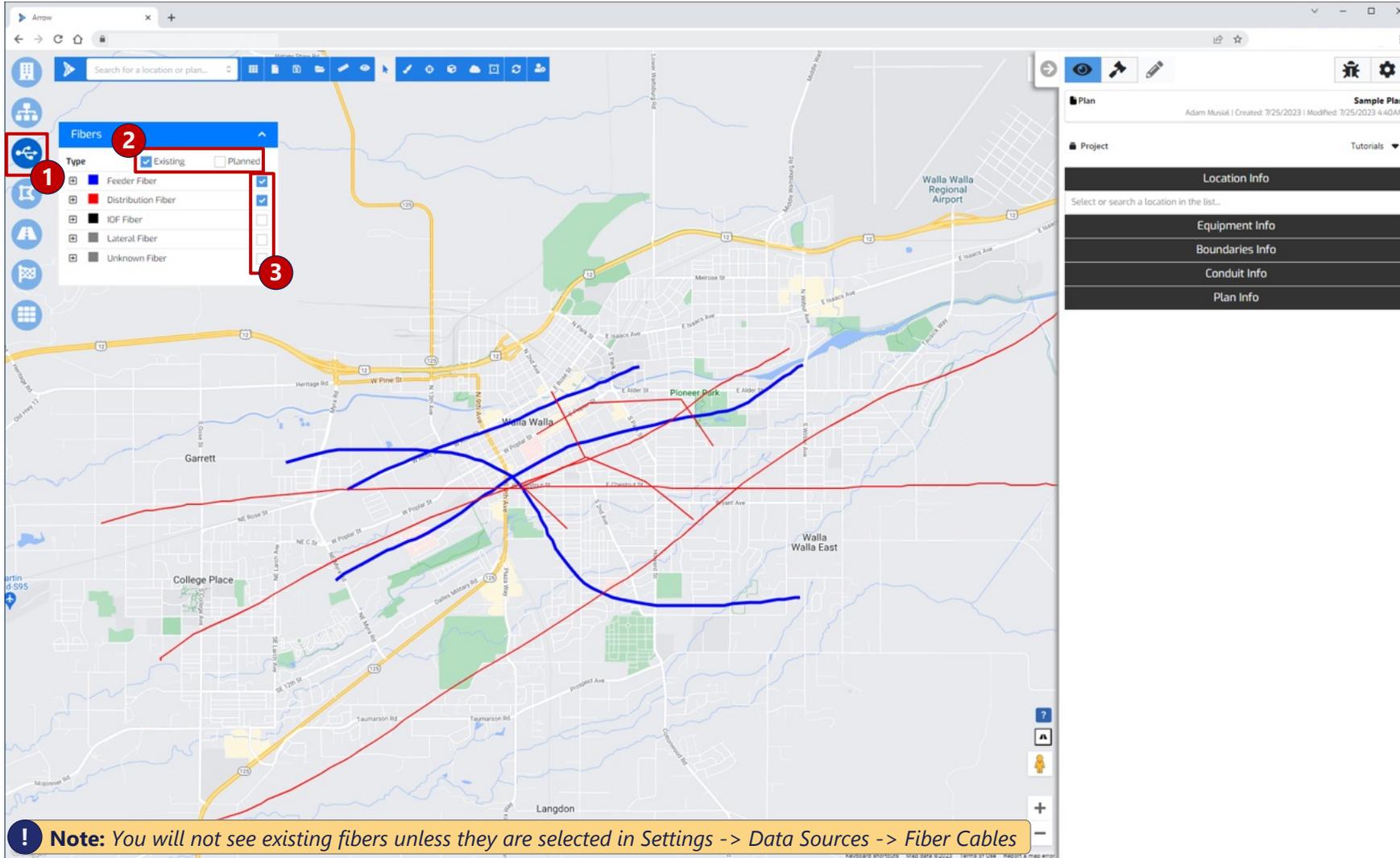
- 1. Open Modal** – Select "Locations" button to open the modal
- 2. Existing vs. Planned** – Toggle viewing existing and/or planned locations
Note: Planned locations only show up for RFP plans
- 3. Endpoint Selection** – Select the checkbox corresponding to the desired location type(s)
- 4. Heatmap** – Toggle location heatmap off/on to see the individual locations or heatmap rendering

Network Equipment modal is where a user can turn on equipment layers to view on the map



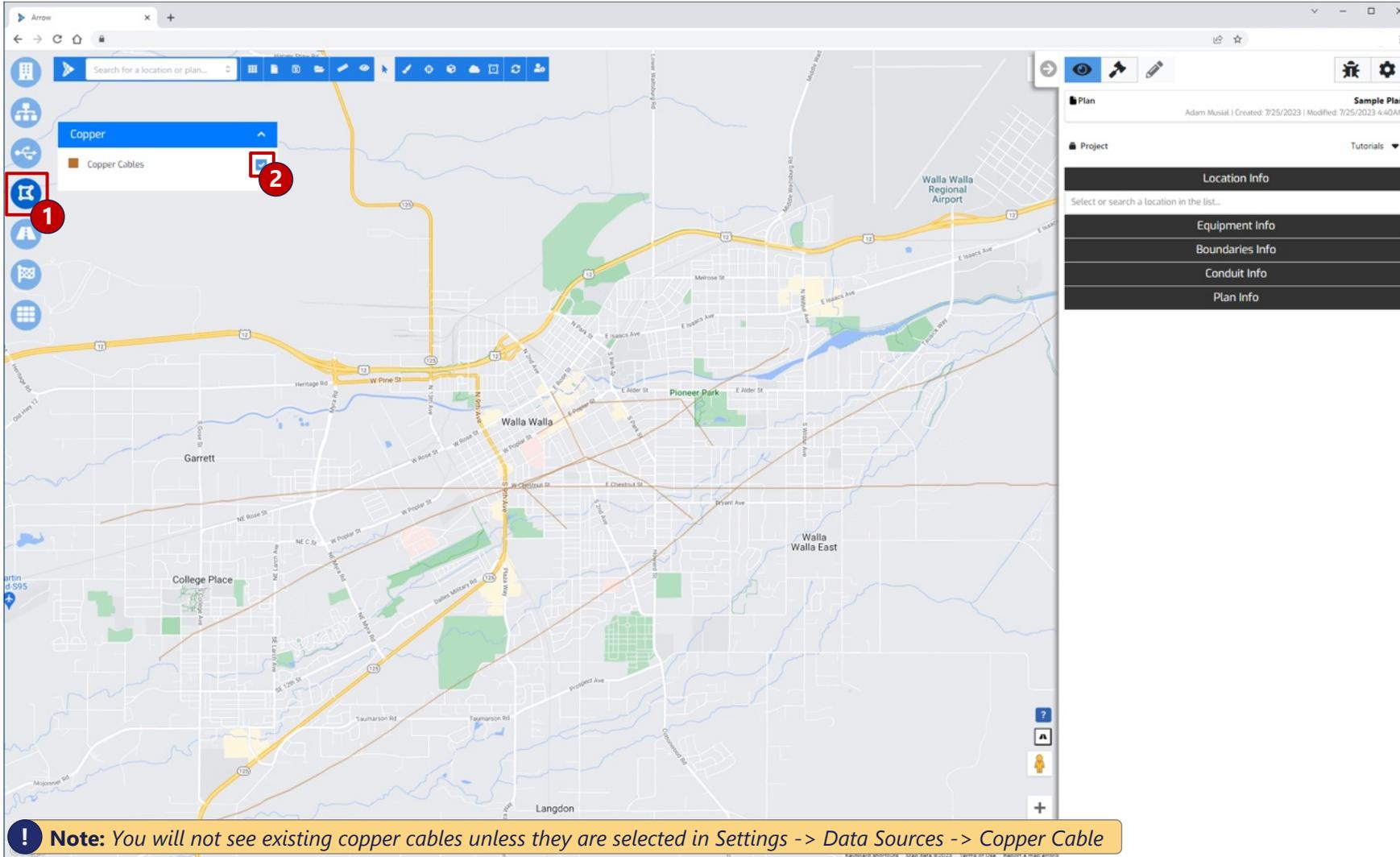
- 1. Open Modal** – Select “Network Equipment” button to open the modal
- 2. Existing vs. Planned** – Toggle viewing existing and/or planned network equipment
- 3. Show Boundaries** – Display site boundaries on the map
- 4. Equipment Selection** – Toggle specific equipment types to bring into the view

Fibers modal is where a user can turn on cable layers to view on the map



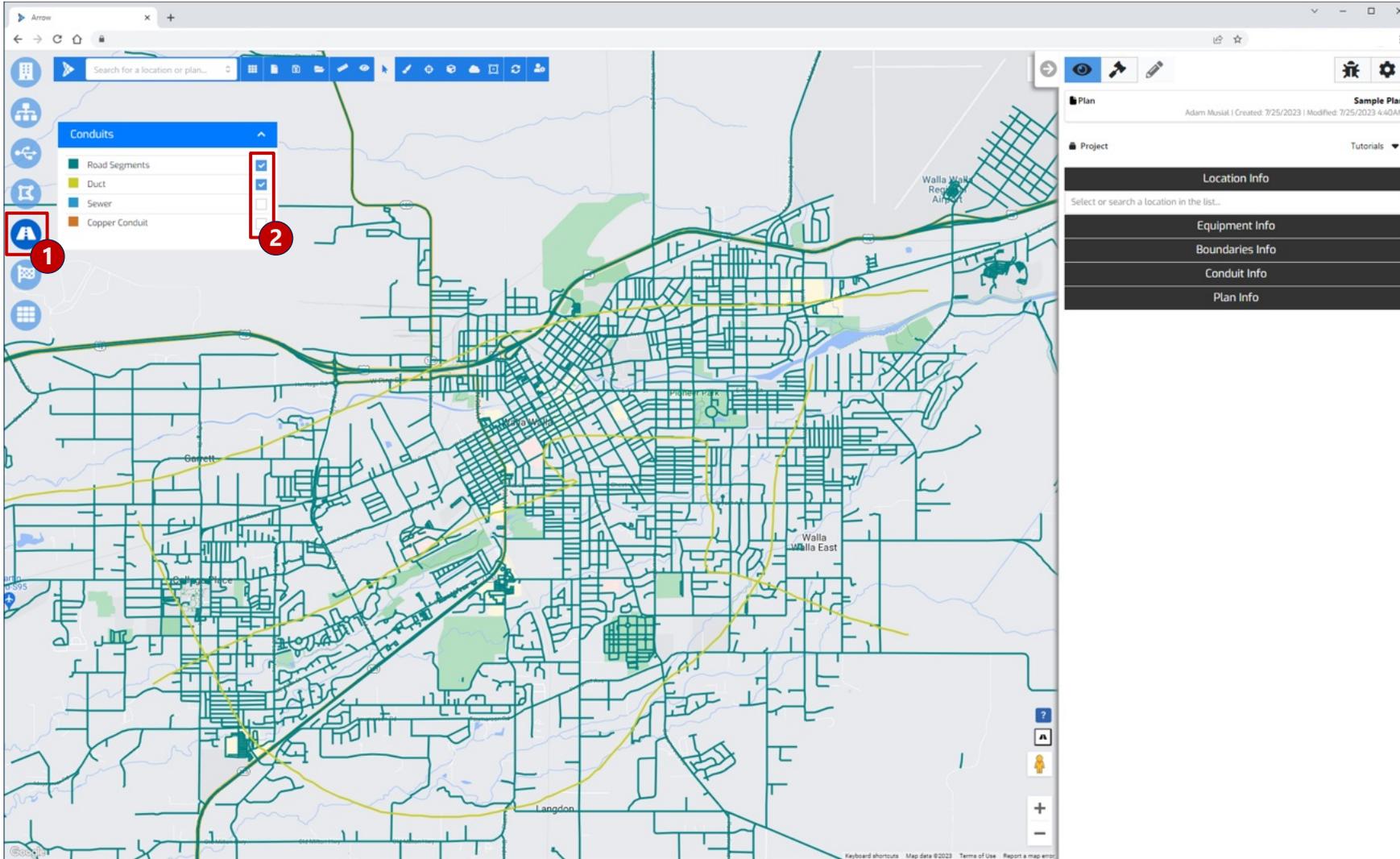
- 1. Open Modal** – Select “Fibers” button to open the modal
- 2. Existing vs. Planned** – Toggle viewing existing and/or planned fibers
- 3. Fiber Selection** – Toggle specific fiber types to bring into the view

Copper modal is where a user can turn on existing copper layers to view on the map for reference



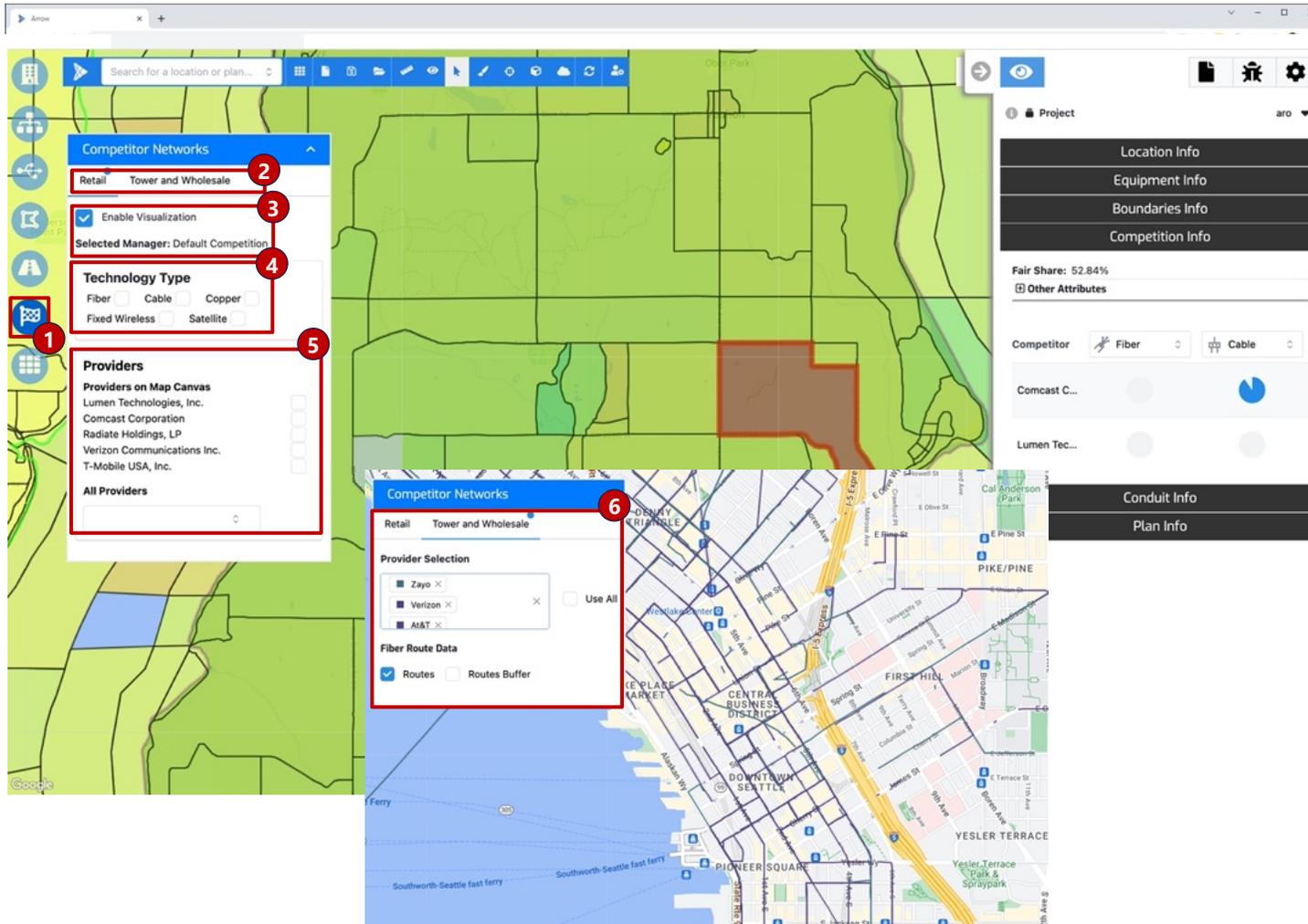
- 1. Open Modal** – Select “Copper” button to open the modal
- 2. Copper Selection** – Toggle cable visualization on/ off

Conduits modal is where a user can visualize road segments and other conduit types, along which new network can be planned



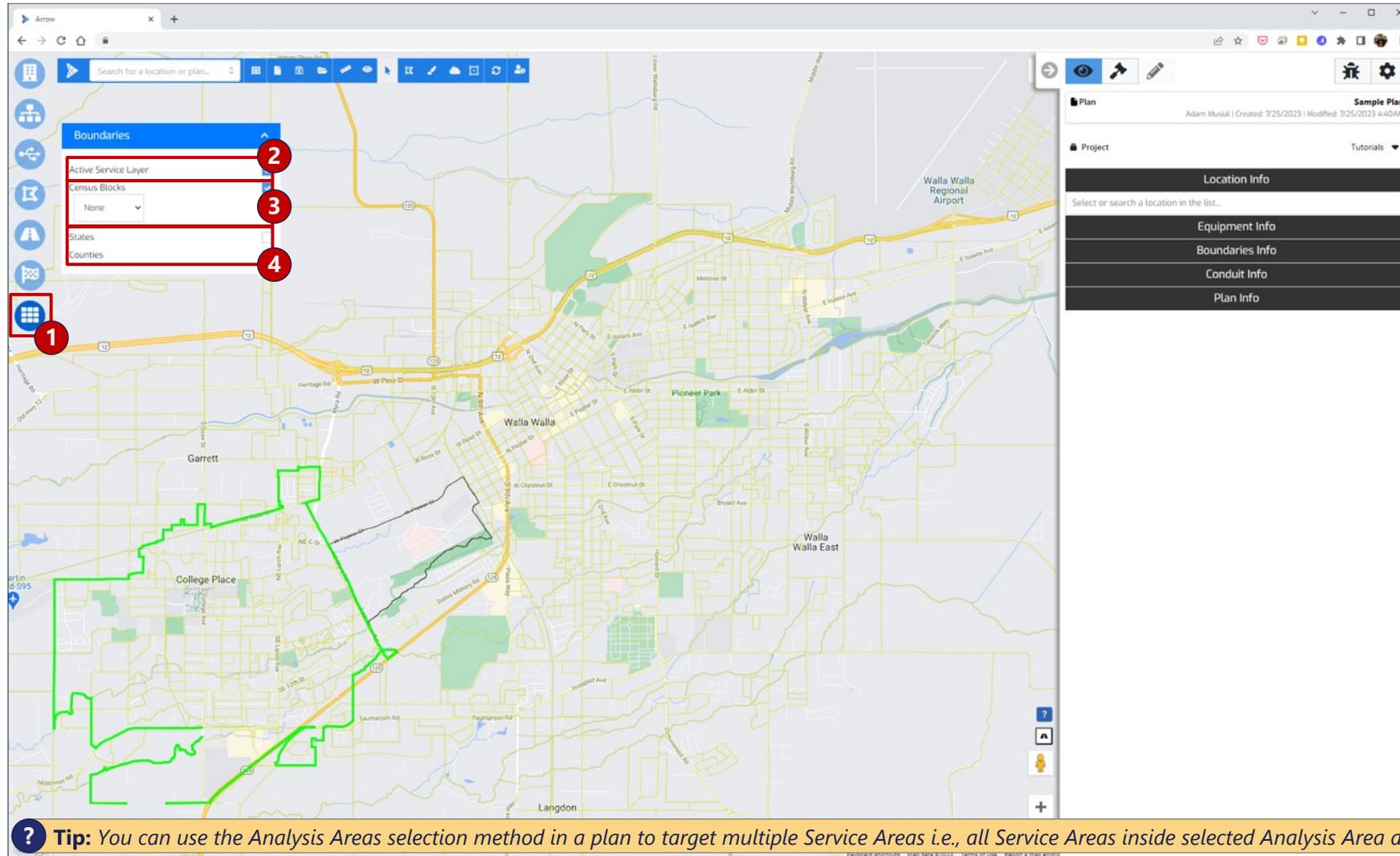
1. **Open Modal** – Select “Conduits” button to open the modal
2. **Cable Selection** – Toggle specific conduits layers to bring into the view

Competition modal visualizes FCC BDC and GeoTel provider data that comes preloaded with Arrow



1. **Open Modal** – Select “Competition Networks” button to open the modal
2. **Competitor Type** – Select between Retail or Tower and Wholesale. Retail is based on FCC BDC data and Tower and Wholesale is based on GeoTel data.
3. **Enable Visualization** – Turn on the heat map based on the Competition Resource Manager that is currently selected. The color gradient varies from green for limited competition and high fair share to red for intense competition and low fair share.
4. **Technology Type**– Filter based on the provided technology
5. **Providers** – Filter based on specific providers
6. **Tower and Wholesale**– Visualize Fiber Routes for all or select providers in the area

Service Areas and reference boundaries (Analysis Areas) can be toggled on and off from the Boundaries modal



1. **Open Modal** – Select “Boundaries” button to open the modal
2. **Active Service Layer** – Toggles on/off rendering of service area boundaries selected in Service Layer data selection
3. **Census Blocks** – Renders 2020 Census Blocks, for reference
4. **Analysis Areas** – States, Counties and any other boundaries loaded below can be visualized and used in plan target selection as Analysis Area

Note: Having a boundary switched on is necessary for running plans targeting “Service” and “Analysis” Areas, but not when targeting individual locations



Header Bar

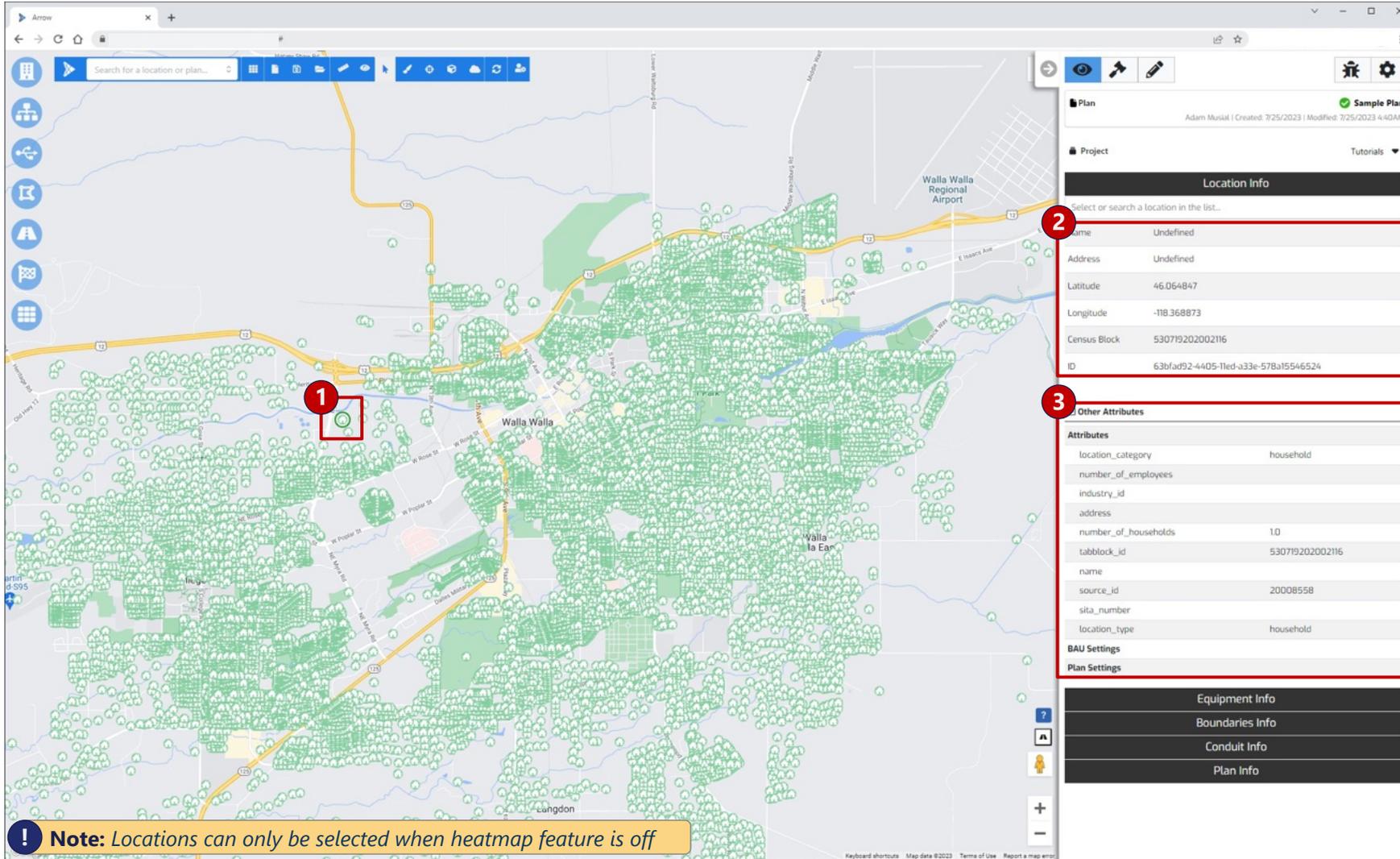
Visualization Modal

View Mode

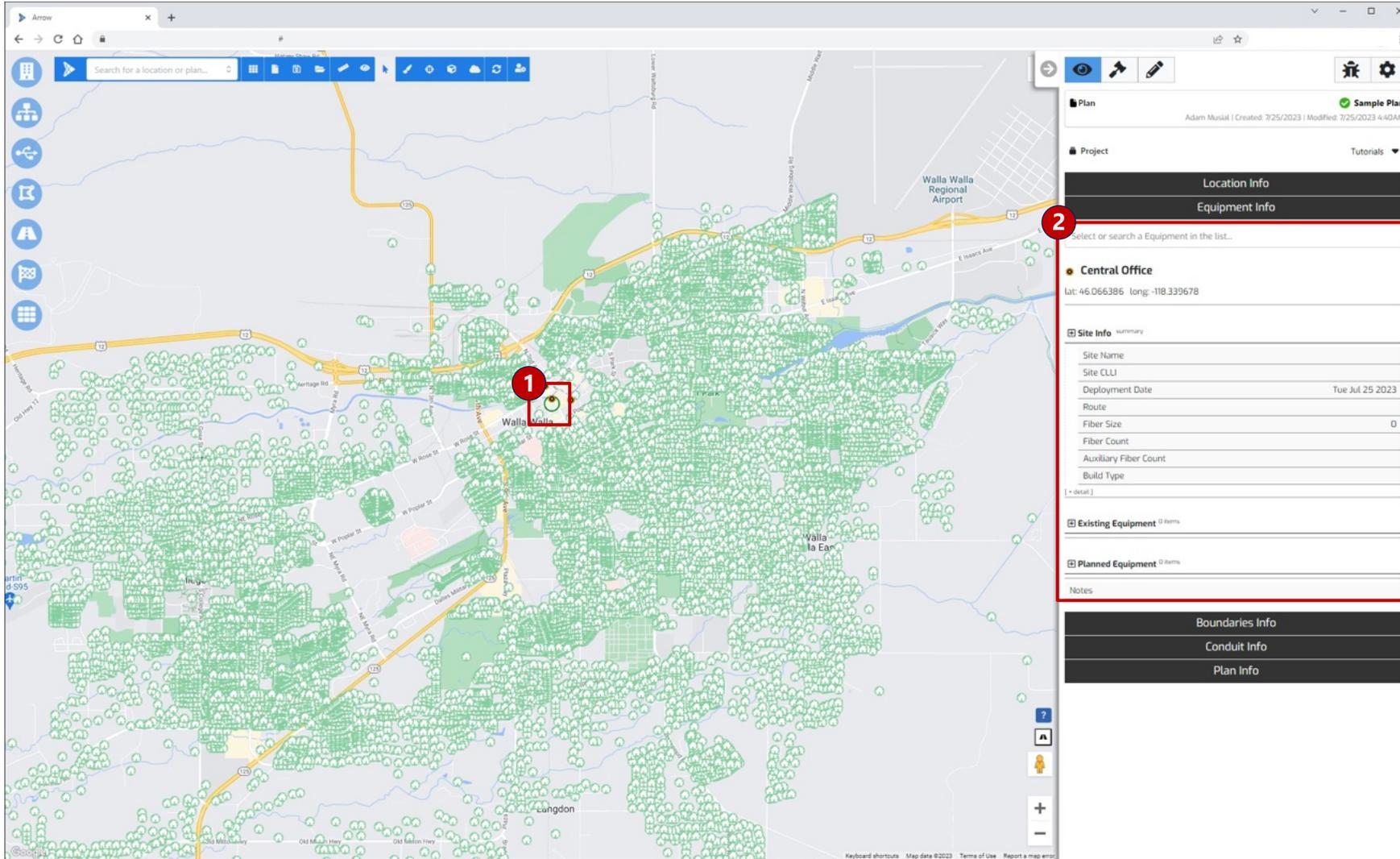
Analysis Mode

Settings

Location Info tab allows users to inspect details of individual locations

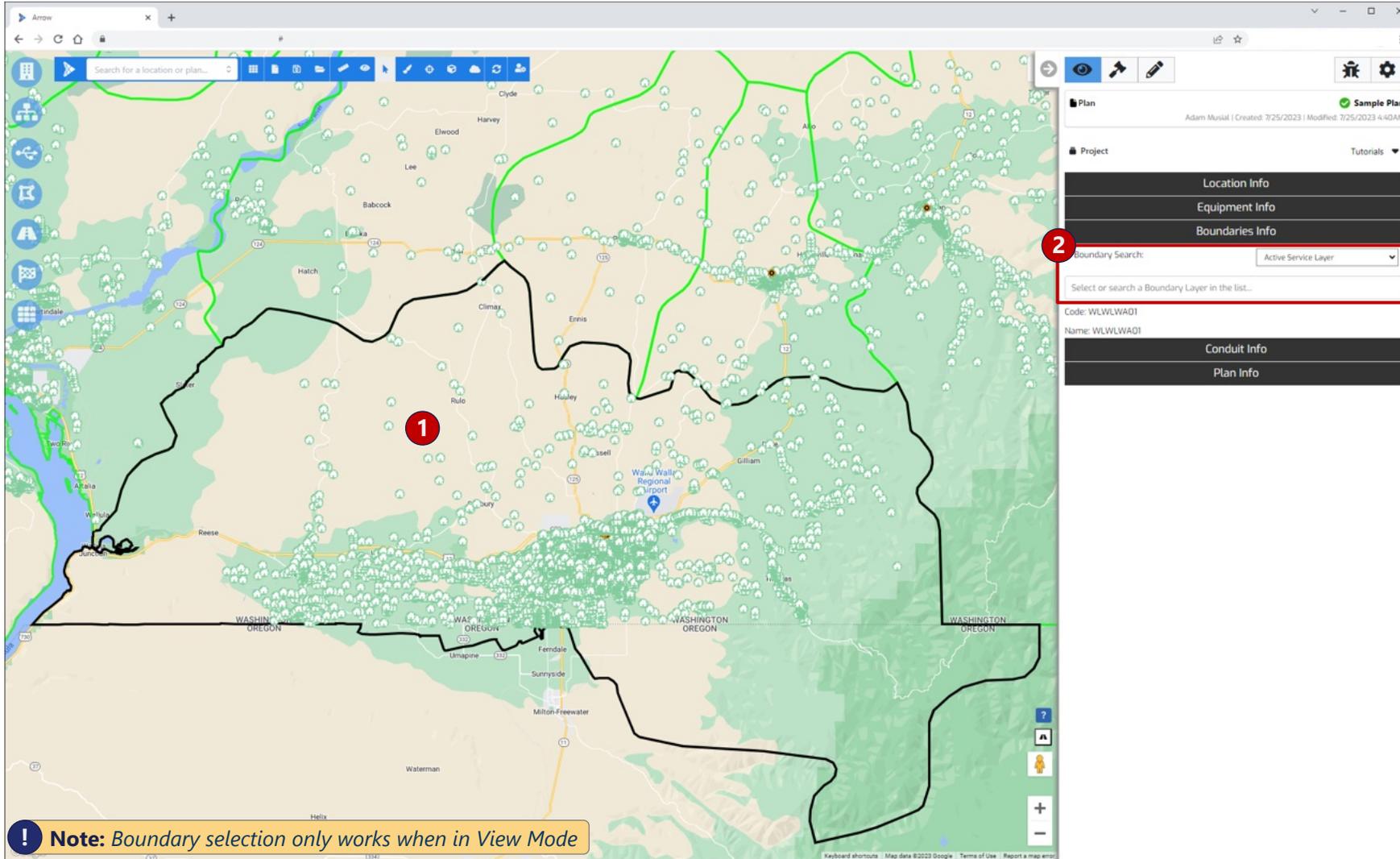


Equipment Info tab allows users to inspect the details of existing and planned network equipment



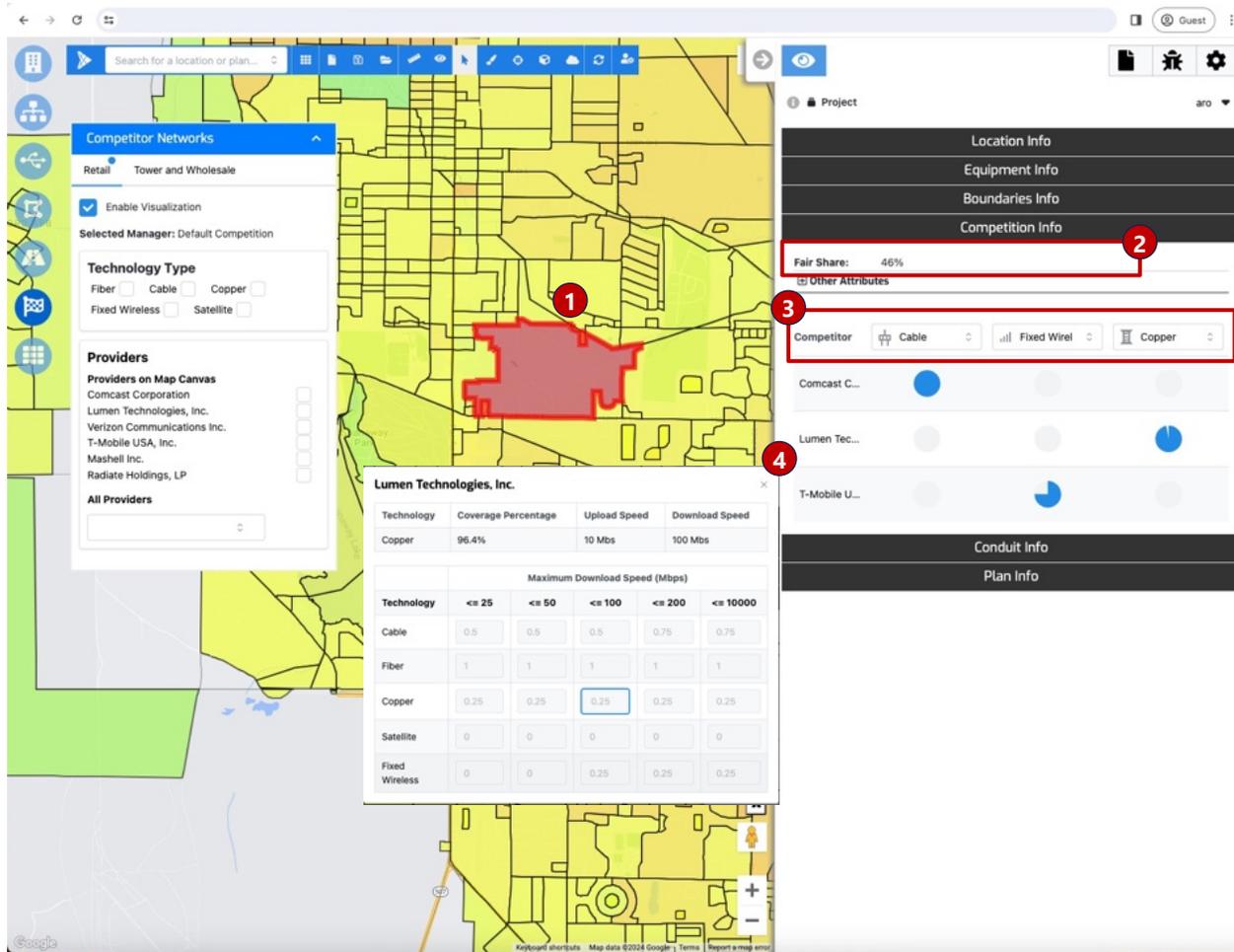
- 1. Select Equipment**– Click on individual equipment element on a map to bring up the Equipment Info tab
- 2. Location Information** – Equipment details, if set by the user (existing equipment), or placed in the plan (planned equipment), display in the panel

Boundaries Info tab enables users to look up active service area name, or search for it on a map using its name



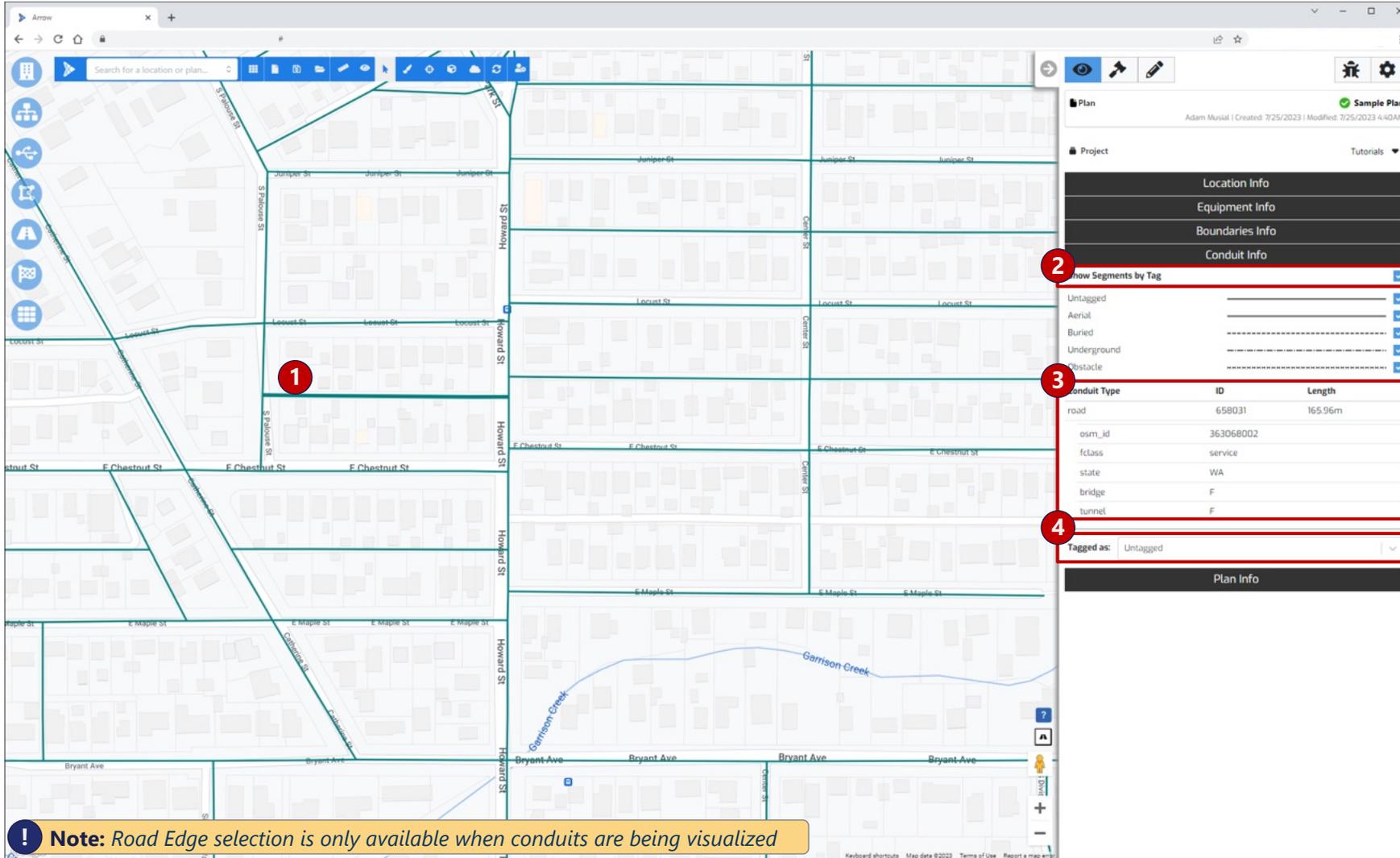
1. **Select Boundary** – Click inside the boundary to bring up its details
2. **Boundary Search** – Search for boundaries using individual service area's names or codes

Competition Info tab enables users to understand the providers present in a specific boundary



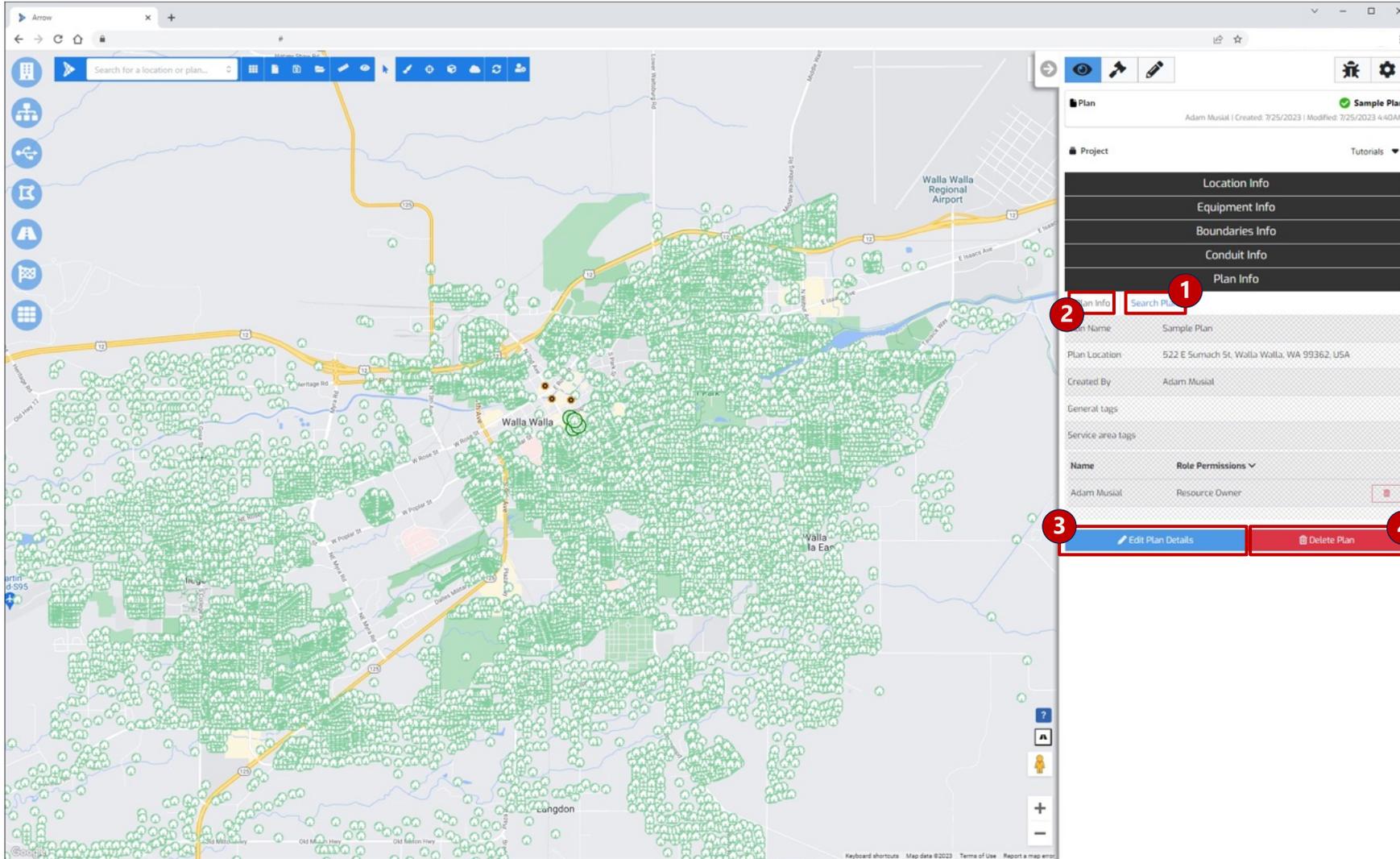
Note: Boundary selection only works when in View Mode

Conduit Info panel displays information about the conduits and enables users to change placement type of individual road segments



- 1. Select Conduit** – Select individual segment by clicking it on a map
- 2. Show Segments by Tag** – Displays placement tags of road segments, if available
- 3. Conduit Info** – Displays available segment attributes
- 4. Tagged As** – Users with modify permissions and above can change placement tag of the selected segment(s). Use the Shift key to select multiple segments

Plan Info tab allows users to search, open, delete, rename and update permissions to existing plans



1. **Search Plans** – Opens up plan search utility
2. **Plan Info** – Brings up info panel with key information about the plan
3. **Edit Plan Details** – Unlocks the greyed-out area above, and allows the user to rename the plan, update start location, tags and user permissions
4. **Delete Plan** – Deletes current plan



Header Bar

Visualization Modal

View Mode

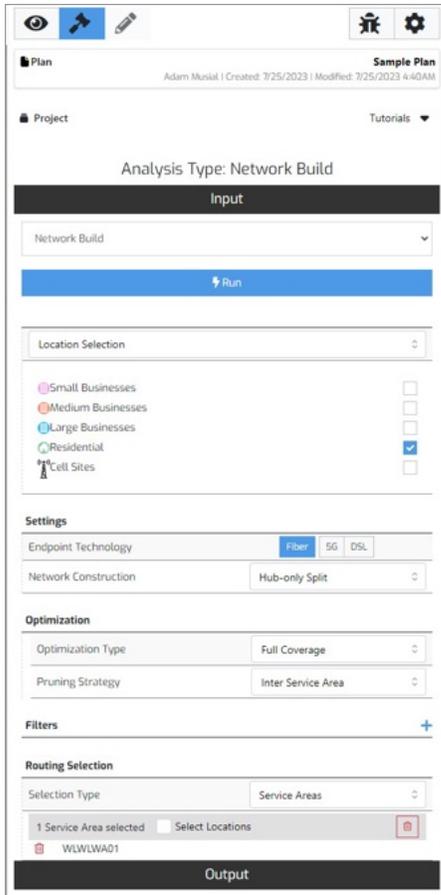
Analysis Mode

Settings

Analysis Mode is used to set up optimization plans and review their outputs

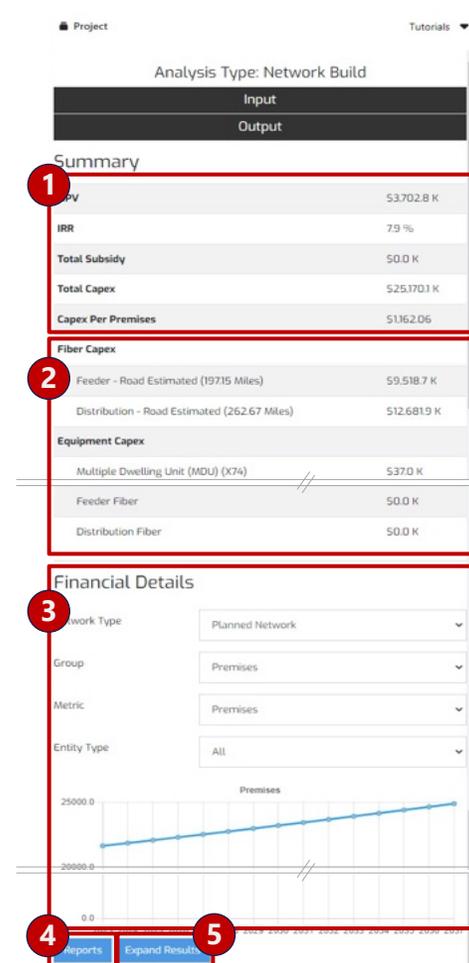
Plan Inputs

Define all the aspects of optimization plan



Plan Outputs

Summary results and access to detailed reports



1. **Summary Financials** – Plan KPIs
2. **Bill of Materials** – Count, mileage and cost of all network equipment elements placed in the plan
3. **Financial Details Charts** – Visualization of all business case line items
4. **Reports** – Access to the Reports menu, from where detailed reports can be downloaded
5. **Expand Results** – Opens up results visualization modal from where plan financials can be inspected in greater detail

Note: Visit Arrow Quick Start guide to learn more about the Inputs panel



Header Bar

Visualization Modal

View Mode

Analysis Mode

Settings

Setting menu is used to select Data and Resource Managers used in a plan

Data Selection

Specifies data layers to use in a plan

The screenshot shows the 'Data Selection' section of a settings menu. At the top, there are icons for visibility, navigation, and editing, along with a 'Sample Plan' header and metadata: 'Adam Musial | Created: 7/25/2023 | Modified: 7/25/2023 4:40AM'. Below this is a 'Project' section with a 'Tutorials' dropdown and 'Commit', 'Discard', and 'Up' buttons. The 'Data Selection' section contains several rows, each with a category name, a dropdown menu, and an 'Add' icon:

Category	Selected Item
Locations	Businesses (2021) x Households (2021) x
Service Layer	Wirecenters (Geotel 2021) x
Equipment	Central Offices (Geotel 2021) x
Fiber Cables	None Selected
Copper Cable	None Selected
Conduits	Road Segments (OSM) x
Conic tile system	None Selected
Construction locations	None Selected

Resource Selection

Defines modeling assumptions to use

The screenshot shows the 'Resource Selection' section of a settings menu. It features the same top navigation and 'Sample Plan' header as the Data Selection screen. Below the 'Project' section, the 'Resource Selection' section contains a list of resource managers, each with a dropdown menu and an 'Add' icon:

Resource Manager	Selected Item
Price Book	Default Price Book
Telecom Spend Matrix	Default Telecom Spend Matrix
Competition	Default Competition
ROIC Manager	Default ROIC Manager
ARPU Manager	Default ARPU Manager
Impedance Manager	Default Impedance Manager
Rate Reach Manager	Default Rate Reach Manager
Network Architecture Manager	Default Network Architecture Manager
Fusion Manager	Default Fusion Manager
Planning Constraints Manager	Default Planning Constraints Manager

Note: Detailed documentation of Data Layers and Resource Managers can be found in Data Preparation guide and Resource Managers guide, respectively.

**Global reach.
Local expertise.**



Our Offices

Boston	Paris
Los Angeles	San Francisco
London	Singapore
Mexico City	Sydney
Milan	Warsaw
Munich	Zurich
New York	

Our Experience



Learn more at:

<https://www.altmansolon.com/products/network-planning-arrow/arrowguide/>

Customer Success Team:

arrow-support@altmansolon.com