

# USER GUIDE

**2024**  
Version 1.0

Geothermal Favourability Mapping | Resource Quantification | References

## Technical Information

Home | Geothermal Atlas of Alberta | Geological Units | Technical Information | Help

Legend

- Base Map Layers
- NTS 250K Grid
- Temperature Mapping of Selected Geological Strata
- Precambrian temp top 10m (°C)
- High: 130
- Low: 28

Geothermal Atlas of Alberta - Leduc Formation

Legend

- Base Map Layers
- Alberta Province
- Geology & Structure
- Leduc Formation Extent
- Geothermal Favourability Maps
- Favourability Map Scenarios
- Weighted Overlay (50-30-20)
- Low
- Medium
- High
- Very High

# Getting Started

The Geothermal Atlas of Alberta is a public, web-based geographic information system (GIS) application that provides geoscience data and information relevant to the assessment of Alberta's geothermal energy potential, supporting the government and industries in developing geothermal energy in Alberta.

This user guide document describes the widgets in the interactive mapping application and provides step-by-step instructions to help users maximize the platform's functionalities.

This section introduces users to key system requirements for accessing the [Geothermal Atlas of Alberta v1](#).

## System Requirements

### Recommended monitor size

This current version of the Geothermal Atlas is optimized for desktop computers and laptops. These devices should have a minimum monitor resolution of 1024 x 768 to effectively view the web application. We recommend a 1920 x 1020 monitor to ensure the best experience. Make sure your browser window zoom is set between 67-100% size to have a good layout of the interactive application. This is dependent on the hardware configuration of the desktop or computer laptop.

### Internet or mobile connection speed

For optimal performance, a broadband internet connection with at least 4 Mbps connection speed or a 4G mobile data connection is recommended to run the Geothermal Atlas of Alberta platform.

### Supported browsers

The Geothermal Atlas of Alberta is supported on the following browsers:



Google Chrome 107x



Mozilla Firefox 109x



Microsoft Edge 107x



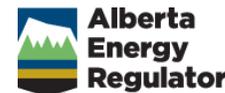
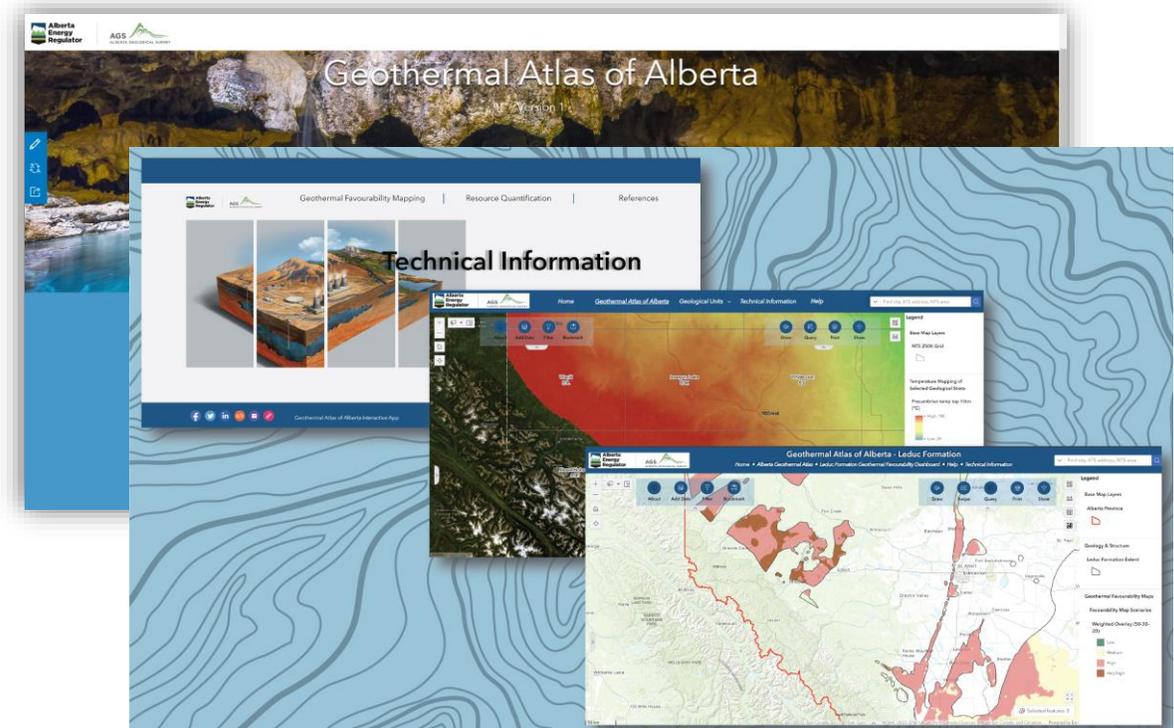
Safari version 15x

# Platform Overview

The Geothermal Atlas of Alberta is created and shared using Esri's ArcGIS Online cloud-based software. Using smart and data-driven mapping approaches, the platform interacts with the rich repository of geological data generated and hosted by the [Alberta Geological Survey \(AGS\)](#).

The atlas platform provides innovative access to geothermal energy data and scientific information intended to facilitate decision-making and planning for geothermal energy exploration and development in Alberta.

Within the Atlas Viewer, users can access a wide range of information and perform queries such as searching for depth, thickness, and temperature at precise locations, gathering statistics for areas of interest, and unlocking valuable insights for geothermal energy exploration and development.



# Geothermal Atlas Design

## Design and web app creation

Version 1 of the Geothermal Atlas of Alberta was developed using a suite of Esri configurable applications, such as ArcGIS Hub, Experience Builder, and Map Viewer.

For this project, the interactive applications were created for the following geological units: the Leduc Formation, the combined Swan Hills and Slave Point formations, and the Granite Wash.

## Geothermal Atlas user interface design

As part of the design phase of the geothermal atlas, several functionalities in the form of widgets were considered in the platform design.

The Geothermal Atlas interface includes a main landing page with provincial-focused geological/geothermal data layers/related information and formation-specific pages.

For this phase of the project, the stratigraphic units considered were:

- Leduc Formation
- Swan Hills / Slave Point Formations
- Granite Wash

## ***Resource***

Mossop, G.D. and Shetsen, I., comp. (1994): Geological atlas of the Western Canada Sedimentary Basin; Canadian Society of Petroleum Geologists and Alberta Research Council, URL <<https://ags.aer.ca/reports/atlas-western-canada-sedimentary-basin>>, Accessed June 20, 2023

# Geothermal Atlas of Alberta – User Interface

**Geothermal Atlas of Alberta**

Home • Leduc Formation • Swan Hills / Slave Point Formations • Granite Wash • Help • Technical Information

Find city, ATS address, NTS area

**Map Layers**

- Geology & Structure
- Temperature Maps of Selected Geological Strata
- Geothermal Favourability Maps
- Resource Quantification
- Hydrogeology & Geochemistry
- Relevant Information
- Base Map Layers

**Legend**

Temperature Maps of Selected Geological Strata

Temperature (°C) at Top of Precambrian

- 165 - 180
- 145 - 165
- 125 - 145
- 105 - 125
- 85 - 105
- 65 - 85
- 45 - 65
- 24 - 45

**Base Map Layers**

Alberta Province

**Widget List**

- Navigation Links
- Zoom
- Default Map View
- About
- Add Data
- Filter
- Bookmark
- Map Layers
- Scale Bar
- Table
- Search
- Draw
- Query
- Print
- Share
- Basemap
- Measure
- Legend

**Provincial Interface**

Subsurface Temperature Point Data

UWI	Latitude (NAD83)	Longitude (NAD83)	Data Source	Measurement Type	Depth of Temperature	Elevation of Temperature	Recorded Temperature	Best Estimate Formation	Publisher
100010100505W400	49.3516	-110.5460	Log	Well log header in Log AS...	1,131	-140	35	39	Alberta G
100010100717W400	49.5271	-112.1774	Log	Well log header in Log AS...	1,011	-59	32	34	Alberta G
100010100816W400	49.6131	-112.0396	Log	Well log header on micro...	1,004	-102	33	35	Alberta G
100010100823W400	49.6116	-112.9874	Nieuw	Drillstem test	1,283	-327	33	33	Alberta G

Total: 200000 | Selection: 0

# Geothermal Atlas of Alberta – User Interface

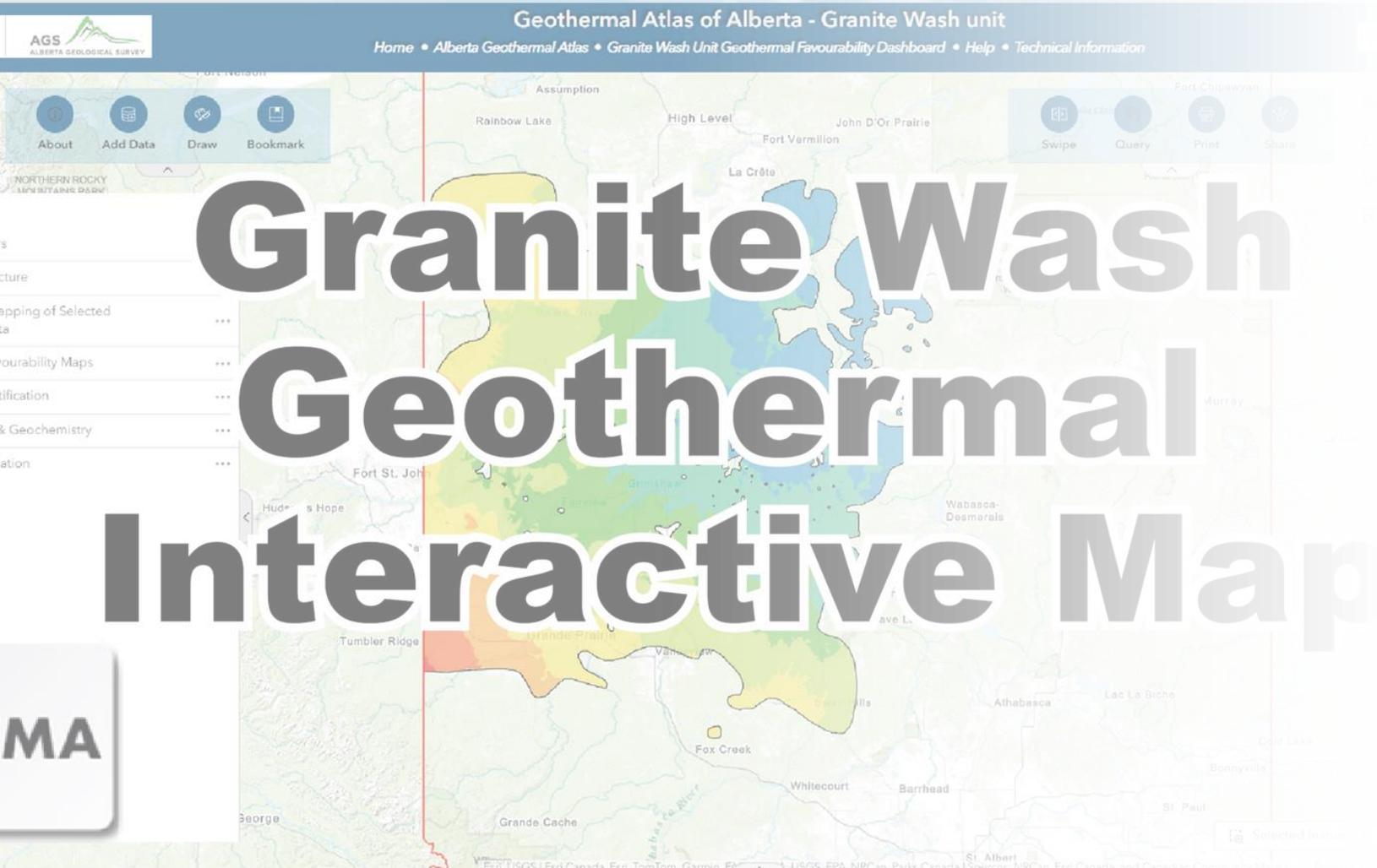
**Formation-Specific Interface**

**Widget List**

- Navigation Links
- Zoom
- Default Map View
- About
- Add Data
- Draw
- Bookmark
- Map Layers
- Scale Bar
- Table
- Search
- Swipe
- Print
- Query
- Share
- Basemap
- Measure
- Legend
- Summary Statistic – Geological Attributes
- Summary Statistics: Heat-In-Place & Power Calculation (User Selection Tool)

This Table widget hosts the results of the Geological Attributes (User Selection Tool) and the Heat-in-Place / Power (User Selection Tool) results.

Total: 0 | Selection: 0



# Granite Wash Geothermal Interactive Map

## Widget Descriptions

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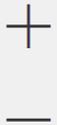
MA

# Description of Widgets

## Geothermal Atlas of Alberta

[Home](#) • [Leduc Formation](#) • [Swan Hills / Slave Point Formations](#) • [Granite Wash](#) • [Help](#) • [Technical Information](#)

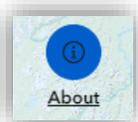
The Navigation links provide users with interactive links to different components or interfaces of the Geothermal Atlas of Alberta. Examples include links to the Home Hub page, Geological Units, Technical Information, and Help documentation.



The Zoom widget allows users to interactively zoom in and out of features in the map display.



The Default Map View widget displays the map's current extent within the context of a larger area.

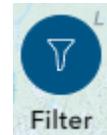


The About widget provides an overview and description of the Geothermal Atlas interactive application.



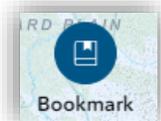
The Add Data widget allows users to add data and maps to the geothermal atlas by accessing data from several locations (such as the ArcGIS content, URLs, or local file upload – like shapefiles)

[Click to access tips and tricks on using the Add Data widget](#)

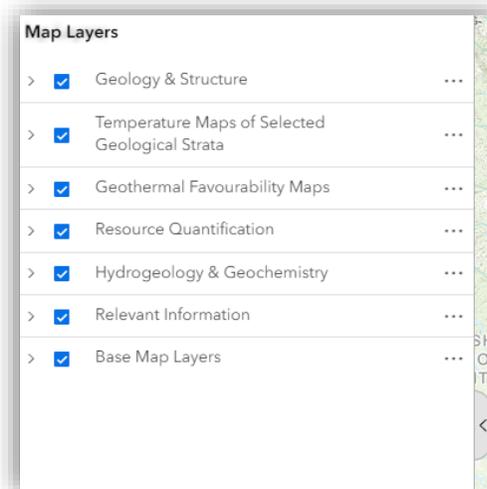


The Filter widget hosts customized filters built to work on specific data layers present in the provincial user interface of the Geothermal Atlas of Alberta interactive mapping application.

[Click to access tips and tricks on using the Subsurface Temperature Filter widget](#)



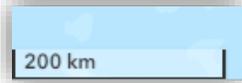
The Bookmark widget allows users to bookmark specific views of locations of interest on a map for quick and easy navigation.



The Map Layers widget displays the list of map layers and their respective symbols in the Geothermal Atlas of Alberta interactive application.

# Description of Widgets

The Scale bar provides a visual indication of distance and feature size on the map.



The Table widget displays interactive attribute tables of feature layers or associated outputs of queries.

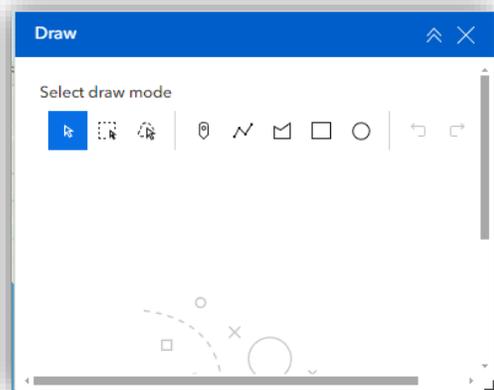
UWI	Latitude (DD, NAD83)	Longitude (DD, NAD83)	Measurement Type	Depth of Temperature Measurement (m)	Elevation of Temperature Measurement (m asl)	Recorded Temperature (°C)
100010100505W400	49.3516	-110.5460	Well log header in Log ASCII standard format	1,131.00	-140.10	35.00
100010100717W400	49.5271	-112.1774	Well log header in Log ASCII standard format	1,011.00	-58.60	32.00
100010100816W400	49.6131	-112.0396	Well log header on microfiche	1,003.71	-102.41	32.80
100010100823W400	49.6116	-112.9874	Drillstem test	1,282.50	-326.80	33.40

[Click to access additional description of the Table widget](#)

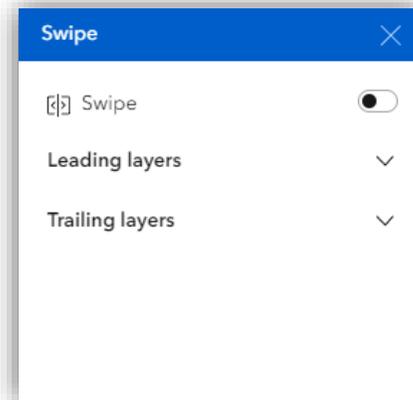
The Search widget allows users to search for geographical locations (such as cities or towns) in Alberta.



The Draw widget allows users to make sketches in the map layout of the atlas.



The Swipe widget allows users to compare different layers in the map easily. Users can slide the swipe tool or move the mouse around to reveal the contents of another layer.



[Click to access tips and tricks on using the Swipe widget](#)



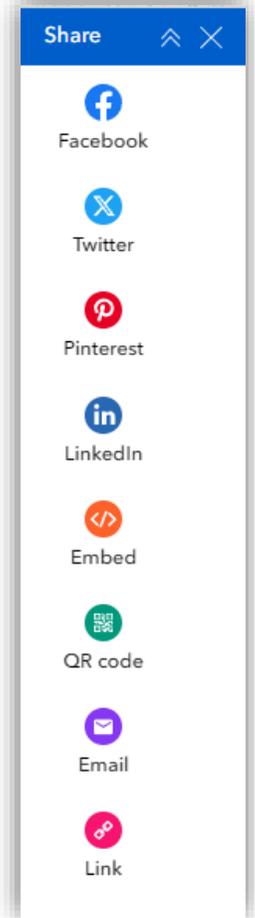
The Query widget allows you to retrieve information from a data source by running an attribute or spatial filter query.

[Click to access the description of the Query widget](#)



The Print widget lets users print web maps and includes options for previewing extents, selecting layouts, and more.

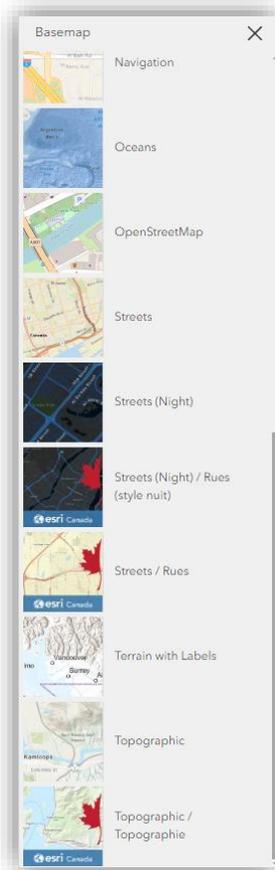
[Click to access tips and tricks on using the Print widget](#)



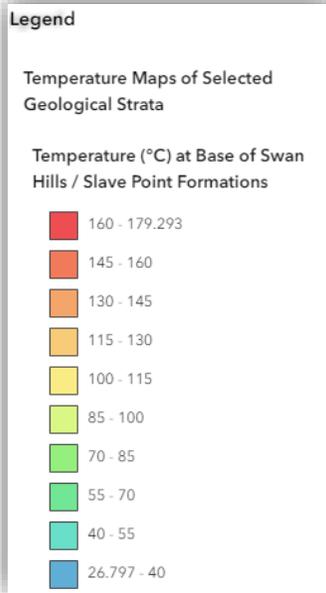
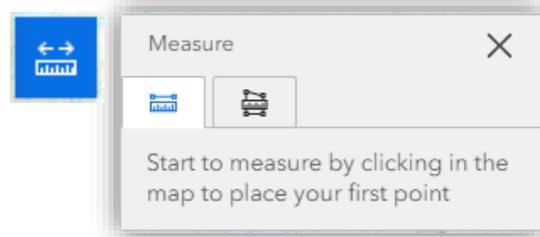
The Share widget allows users to share the interactive mapping application by posting it to several social media platforms.

# Description of Widgets

The Basemap widget hosts a gallery of basemaps and allows users to select one of choice from the available list.



The Measure widget allows users to measure polygon area and line length.



The Legend widget displays labels and symbols for layers in a map. The legend only displays layers and sublayers that are turned on.



**Summary Statistics - Geological Attributes**

<b>Mean Depth to formation (m)</b> Minimum: 0 m Maximum: 0 m Mean: 0 m	<b>Mean Formation Base (masl)</b> Minimum: 0 masl Maximum: 0 masl Mean: 0 masl
<b>Mean Formation Top (masl)</b> Minimum: 0 masl Maximum: 0 masl Mean: 0 masl	<b>Mean Vertical Thickness (m)</b> Minimum: 0 m Maximum: 0 m Mean: 0 m
<b>Mean Base Temperature (°C)</b> Minimum: 0 °C Maximum: 0 °C Mean: 0 °C	<b>Mean Thermal Gradient Precambrian (°C/km)</b> Minimum: 0 °C/km Maximum: 0 °C/km Mean: 0 °C/km

Please run the "Geological Attributes (User Selection Tool)" query to display the statistics summary of the selected area of interest.

NOTE: The summary report encompasses results for all LSDs intersecting the user-selected area, which may vary from the total area of these LSDs.

Summary Statistics: Geological Attributes (User Selection Tool): This widget allows users to display geological attribute summaries for user-defined areas within specific geological units.



**Summary Statistics - Heat-in-Place / Power Estimates**

**Heat-In-Place per Unit Area (PJ/km<sup>2</sup>)**  
Minimum: 0 PJ/km<sup>2</sup>  
Maximum: 0 PJ/km<sup>2</sup>  
Mean: 0 PJ/km<sup>2</sup>

**Gross Thermal Power per Unit Area (MWth/km<sup>2</sup>)**  
Minimum: 0 MWth/km<sup>2</sup>  
Maximum: 0 MWth/km<sup>2</sup>  
Mean: 0 MWth/km<sup>2</sup>

**Gross Electrical Power per Unit Area (MWe/km<sup>2</sup>)**  
Minimum: 0 MWe/km<sup>2</sup>  
Maximum: 0 MWe/km<sup>2</sup>  
Mean: 0 MWe/km<sup>2</sup>

**Required Brine Flow Rate per MWe (m<sup>3</sup>/hr/MWe)**  
Minimum: 0 m<sup>3</sup>/hr/MWe  
Maximum: 0 m<sup>3</sup>/hr/MWe  
Mean: 0 m<sup>3</sup>/hr/MWe

Please run the "Heat-In-Place / Gross Power Summaries (User Selection Tool)" query to display the statistics summary of the selected area of interest.

NOTE: The summary report encompasses results for all LSDs intersected by the user-selected area which may be the same or smaller than the total area of these LSDs.

Summary Statistics: Heat-In-Place & Power Estimates (User Selection Tool): This widget allows users to extract heat-in-place and power calculation summaries of user-defined areas for specific geological units.

# Description of Widgets

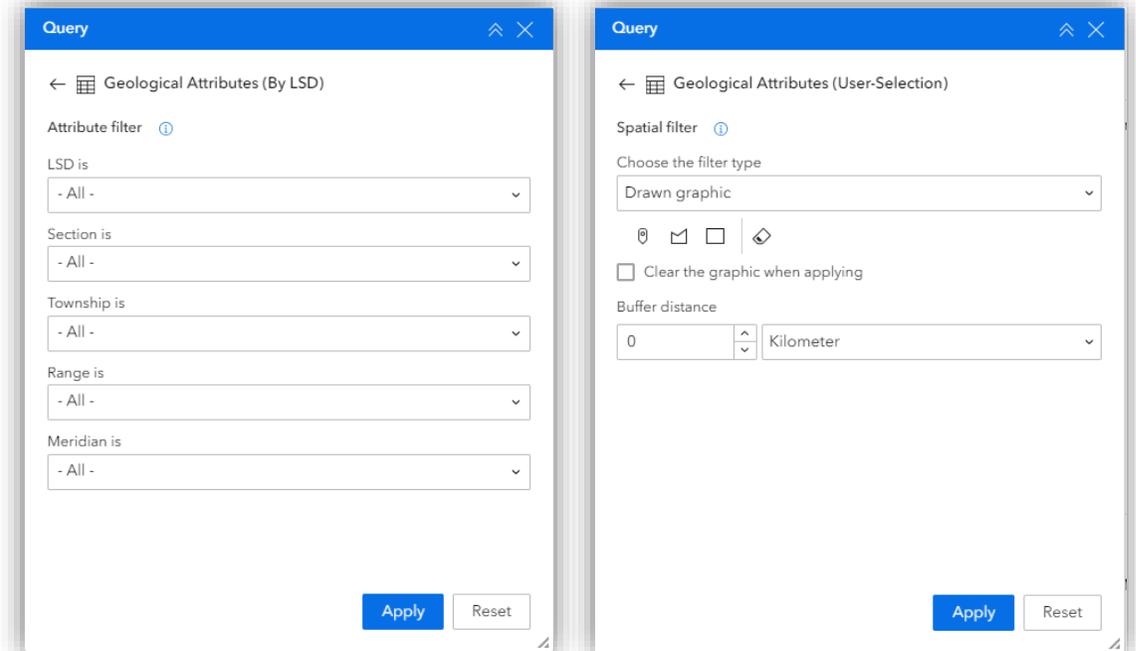
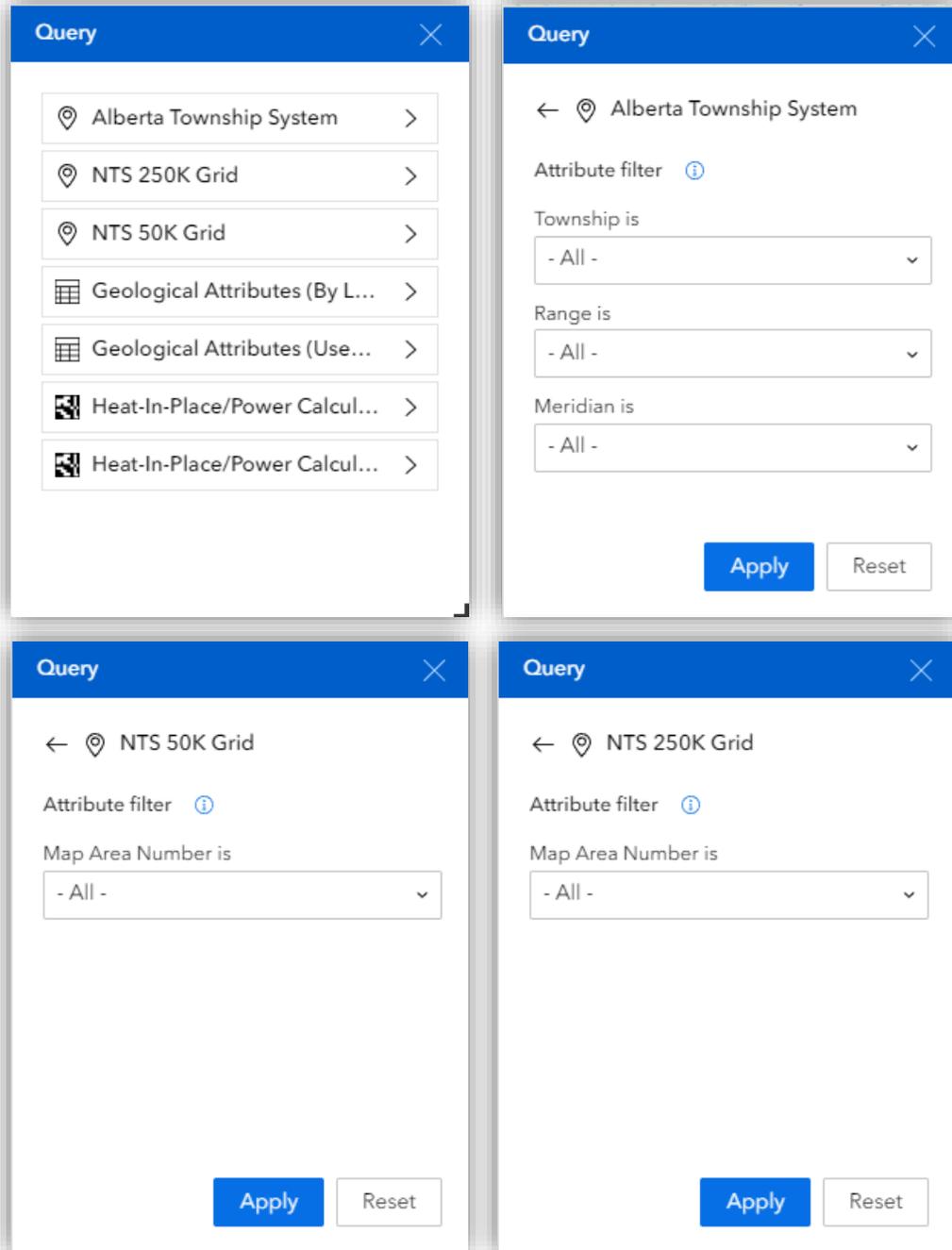
Bottom Hole La...	Bottom Hole Lo...	Formation	Field	Pool / Zone Na...	Sampling Tem...	Total Dissolved...	pH	Density	CO3 (mc
54.719803	-115.905891	Beaverhill Lake	Virginia Hills	Beaverhill Lake	27	163,444	6.21	1.1214	60
54.489554	-115.309919	Beaverhill Lake	Judy Creek	Not Applicable	16	172,243	6.04	1.1221	88.33
54.522266	-115.510781	Beaverhill Lake	Judy Creek	Beaverhill Lake A	77	68,061	7.49	1.0519	206.67

**Collapse Button** – This enables users to collapse and expand attribute table (bottom screen) or widgets panels to the web map screen's top left, top right, and left.

The Table widget allows users to access attributes of the selected feature layers in the Geothermal Atlas. The attribute table is hidden by default, and you can expand or collapse it by clicking on the collapse button with an arrow at the bottom of the page in the centre. Icons on the right will allow you to clear selection, refresh the table, show/hide columns, and export all or selected records to CSV, JSON, or GeoJSON format. When you click on a record in the table, the associated location on the map will be highlighted and panned to the current scale.

# Description of the Query Widgets

Alberta Township and NTS Grid query: These query tools allow users to identify specific locations of interest using the Alberta Township System (ATS) criteria, such as townships, ranges, meridians, or the National Topographic Survey (NTS) map sheet numbers.



Geological Attributes (LSD Address / User Selection tool): This query tool provides specific geological attributes related to specific stratigraphic units (such as depth to the formation, formation tops and base, vertical thickness, base temperature, and thermal gradient).

# Description of the Query Widgets (contd.)

Heat-in-Place / Power Calculation (LSD Address / User Selection tool):  
Both query tools provide heat-in-place and power statistics of user-defined areas. Users can access such information by legal subdivision (LSD) address or selected areas of interest.

The screenshot shows a query widget titled "Heat-In-Place/Power Calculation (By LSD)". It features an "Attribute filter" section with five dropdown menus, each currently set to "- All -". The dropdowns are labeled "LSD is", "Section is", "Township is", "Range is", and "Meridian is". At the bottom right, there are "Apply" and "Reset" buttons.

The screenshot shows a query widget titled "Heat-In-Place/Power Calculation (User Selection Tool)". It features a "Spatial filter" section with a "Choose the filter type" dropdown menu set to "Drawn graphic". Below this are icons for selection tools: a pointer, an envelope, a square, a diamond, and a double arrow. There is a checkbox labeled "Clear the graphic when applying" which is currently unchecked. Below that is a "Buffer distance" section with a numeric input field set to "0" and a unit dropdown menu set to "Kilometer". At the bottom right, there are "Apply" and "Reset" buttons.



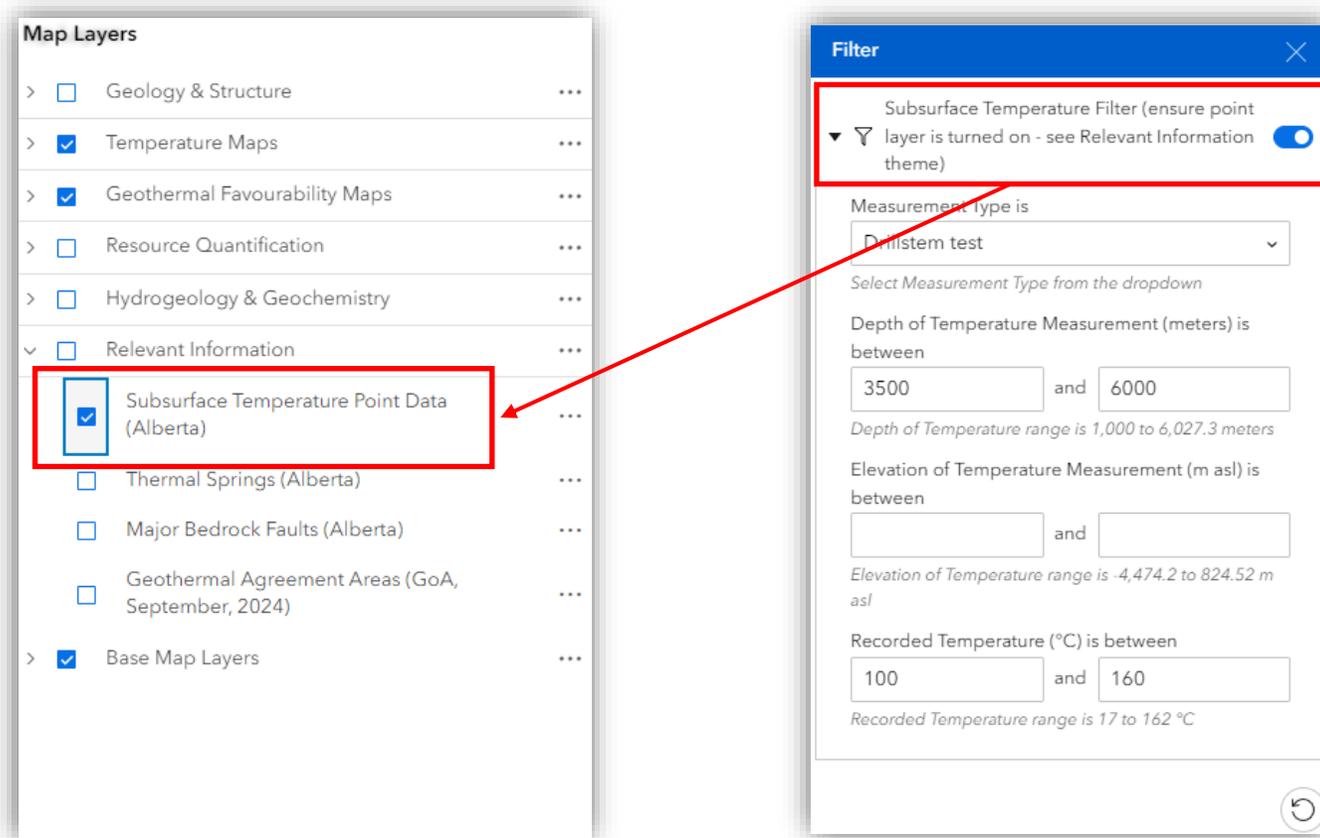
# Tips and Tricks

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# Using the Subsurface Temperature Filter Widget

**Note:** This widget is only available for the Geothermal Atlas provincial interface.



The Subsurface Temperature Filter was built to work with the “Subsurface Temperature Point Data.” This tool is only applicable to the Geothermal Atlas provincial interface.

The Subsurface Temperature Filter allows users to limit the visibility of well data used in generating the AGS-published 3D subsurface temperature model of Alberta’s subsurface (depths >1000 m). Details of the publication can be accessed using this [LINK](#).

Using pre-defined attribute criteria, such as measurement type, depth of temperature measurement, elevation of temperature measurements, and recorded temperature, users can filter well records meeting specified parameters.

# Using the Subsurface Temperature Filter Widget

The screenshot displays the Geothermal Atlas of Alberta web application. The interface includes a top navigation bar with the Alberta Energy Regulator and AGS logos, a search bar, and a main menu. The central map shows a geothermal area with various data points. A 'Filter' widget is overlaid on the map, allowing users to refine data based on measurement type, depth, and temperature. A 'Subsurface Temperature Point Data (Alberta)' popup window shows a detailed record for a specific data point, including UWI, coordinates, measurement type, depth, elevation, and recorded temperature. A legend on the right side provides information about the data and base map layers.

**Filter**

Subsurface Temperature Filter - This tool works with the "Subsurface Temperature Data" (ensure the layer is turned on in the "Relevant Information Layer" theme).

Measurement Type is  
Drillstem test

Select Measurement Type from the dropdown

Depth of Temperature Measurement (m) is between  
3500 and 6000

Depth of Temperature range is 1,000 to 6,027.3 meters

Elevation of Temperature Measurement (m asl) is between  
 and

Elevation of Temperature range is -4,474.2 to 824.52 m asl

Recorded Temperature (°C) is between  
100 and 160

Recorded Temperature range is 17 to 162 °C

**Subsurface Temperature Point Data (Alberta)**

Zoom to

UWI	100110307011W600
Latitude (DD, NAD83)	55.0352
Longitude (DD, NAD83)	-119.5905
Measurement Type	Drillstem test
Depth of Temperature Measurement (m)	4,281.85
Elevation of Temperature Measurement (m asl)	-3,553.95
Recorded Temperature (°C)	129.40
Best Estimate Formation Temperature (°C)	129.40

**Description:** This digital dataset contains temperature data used to create a 3D subsurface temperature model for Alberta's deep subsurface (depths >1000 m). The dataset consists of measured temperatures from drillstem tests and annual pool pressure survey reports, Horner-corrected bottom hole temperature (BHT) data, as well as BHT data that were corrected using an Alberta-calibrated Harrison correction. Additional details regarding the methodology of assembling this dataset can be found in the methodology section of AGS Open File Report 2021-05.

[Click to download](#)

**Legend**

Relevant Information

Subsurface Temperature Point Data (Alberta)

Best Estimate Formation Temperature (°C)

- 140 - 160
- 120 - 140
- 100 - 120
- 80 - 100
- 60 - 80
- 40 - 60
- 24 - 40

Base Map Layers

Provincial Boundary (Alberta)

**Map Layers**

- Geology & Structure
- Temperature Maps
- Geothermal Favourability Maps
- Resource Quantification
- Hydrogeology & Geochemistry
- Relevant Information
  - Subsurface Temperature Point Data (Alberta)
  - Thermal Springs (Alberta)
  - Major Bedrock Faults (Alberta)
  - Geothermal Agreement Areas (GoA, September, 2024)
- Base Map Layers

A screen capture showing an example use case of implementing the “Subsurface Temperature Filter” to visualize data record from drillstem tests used to model the 3D subsurface temperature model with specific parameters—**Measurement Type: Drillstem test, Depth to temperature measurement range: 3500–6000 metres, and Recorded temperature range: 100–160 degrees Celsius.**

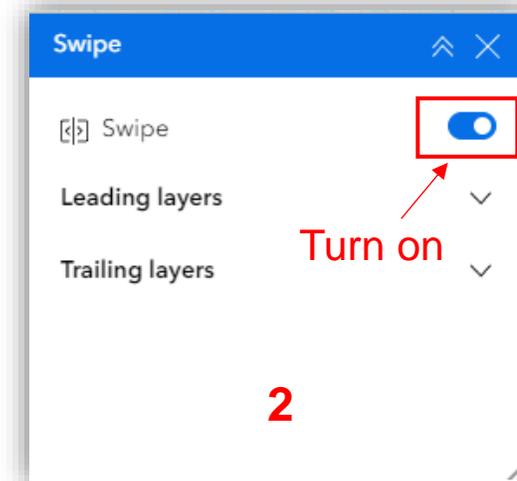
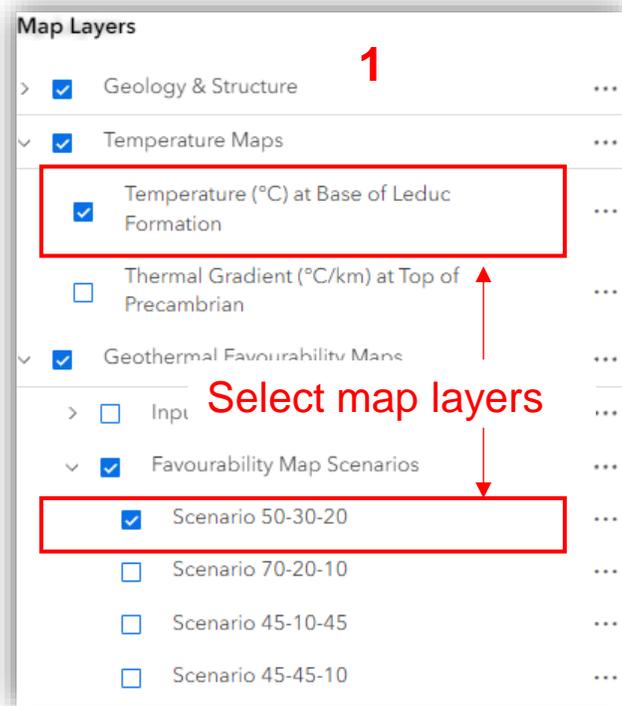
# Using the Swipe Tool

The Swipe widget allows users to compare different layers in the map quickly. Users can slide the swipe tool or move the mouse around to reveal the contents of another layer.

In this tutorial, we would like to compare two grid layers, the Temperature at the Base of formation and a favourability map scenario (e.g., Scenario 50-30-20). Below are steps on how to use the swipe tool.

## Steps

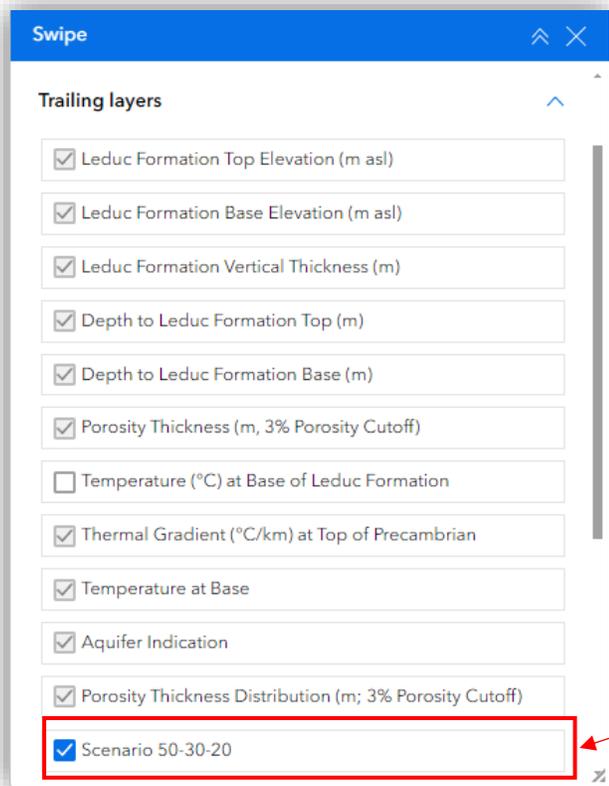
1. Select the Temperature at the Base of the formation and Favourability map scenario – Scenario 50-30-20 layer.
2. Click the Swipe tool. This displays the leading and trailing layers. Ensure the Swipe widget is turned on.



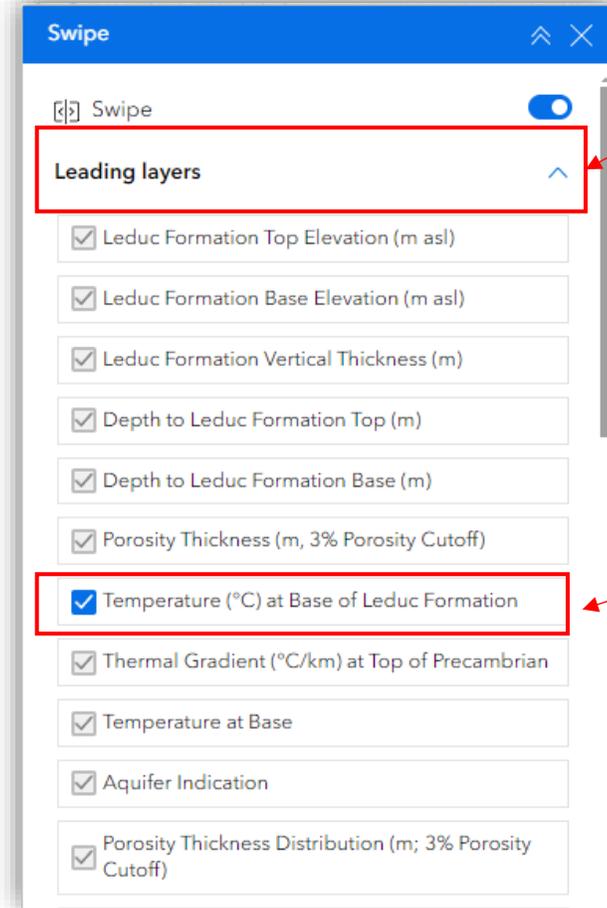
# Using the Swipe Tool (contd.)

## Steps

3. Expand the Leading and Trailing layers.
4. Ensure the Temperature at the Base of the Leduc Formation layer is turned on for the Leading layers.
5. Turn on the Scenario 50-30-20 favourability layer under the Trailing layers. This would be the layer shown at the bottom.



**5**  
Turn on the trailing layer.  
Scenario 50-30-20



**3**  
Expand layer

**4**  
Turn on the  
leading layer.  
Temperature at  
base of Leduc  
Formation

# Using the Swipe Tool (contd.)

## Steps

- The map window is updated with a slider. With this slider, drag to compare both grid layers by moving from left to right.

The screenshot displays the 'Geothermal Atlas of Alberta - Leduc Formation' web application. The interface includes a top navigation bar with logos for Alberta Energy Regulator and AGS (Alberta Geological Survey), and a search bar. The main map area shows a geothermal favourability map of Alberta, with a vertical 'Swipe' tool overlaying two different data layers. A 'Drag to compare' label is positioned over the slider. On the left, a 'Map Layers' panel lists various data layers, including 'Geology & Structure', 'Temperature Maps', and 'Geothermal Favourability Maps'. On the right, a 'Legend' panel provides color-coded keys for 'Leduc Formation Extent', 'Temperature Maps', and 'Geothermal Favourability Maps'. The 'Temperature Maps' legend includes a color scale for 'Temperature (°C) at Base of Leduc Formation' ranging from 35-40 to 160.1-170. The 'Geothermal Favourability Maps' legend shows four levels: Low (green), Medium (yellow), High (red), and Very High (brown). A 'Swipe' dialog box is open, listing 'Trailing layers' with checkboxes for various parameters such as 'Leduc Formation Top Elevation (m asl)', 'Leduc Formation Base Elevation (m asl)', 'Depth to Leduc Formation Top (m)', 'Depth to Leduc Formation Base (m)', 'Porosity Thickness (m, 3% Porosity Cutoff)', 'Temperature (°C) at Base of Leduc Formation', 'Thermal Gradient (°C/km) at Top of Precambrian', 'Temperature at Base', 'Aquifer Indication', and 'Porosity Thickness Distribution (m; 3% Porosity Cutoff)'. The 'Scenario 50-30-20' option is selected in this dialog.

# How to Use the Summary Statistics: Heat-In-Place & Power Calculation (User Selection Tool) Widget

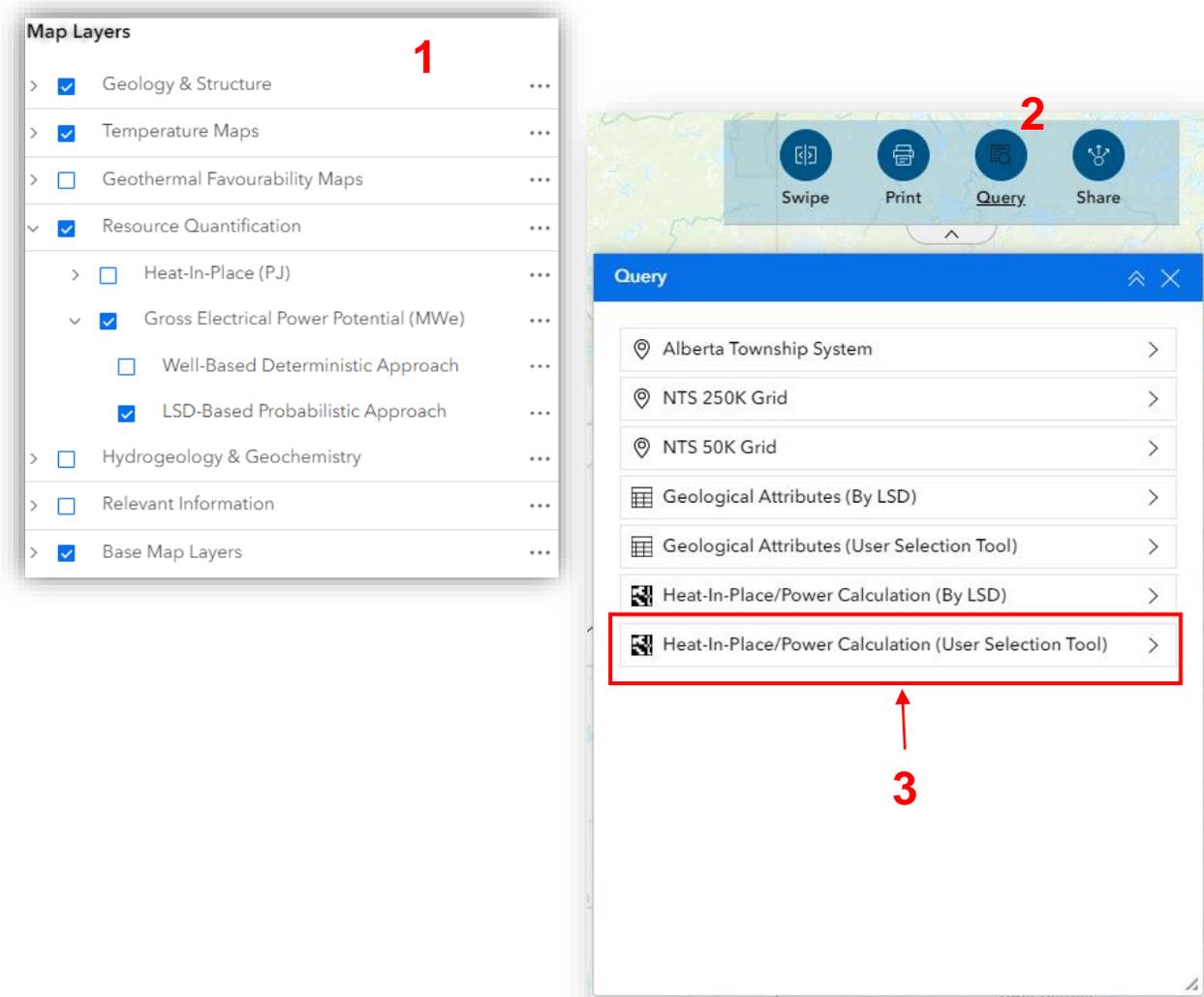
**Note:** This widget is only available on formation-specific pages.

This widget allows users to extract heat-in-place and power calculation summaries of user-defined areas for specific geological units.

This section of the guide will demonstrate the effective use of this tool using a step-by-step guide.

## Steps

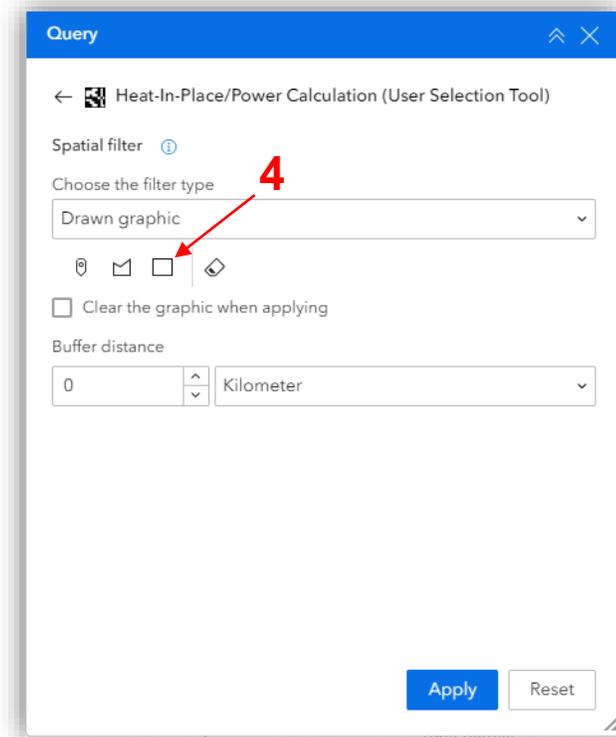
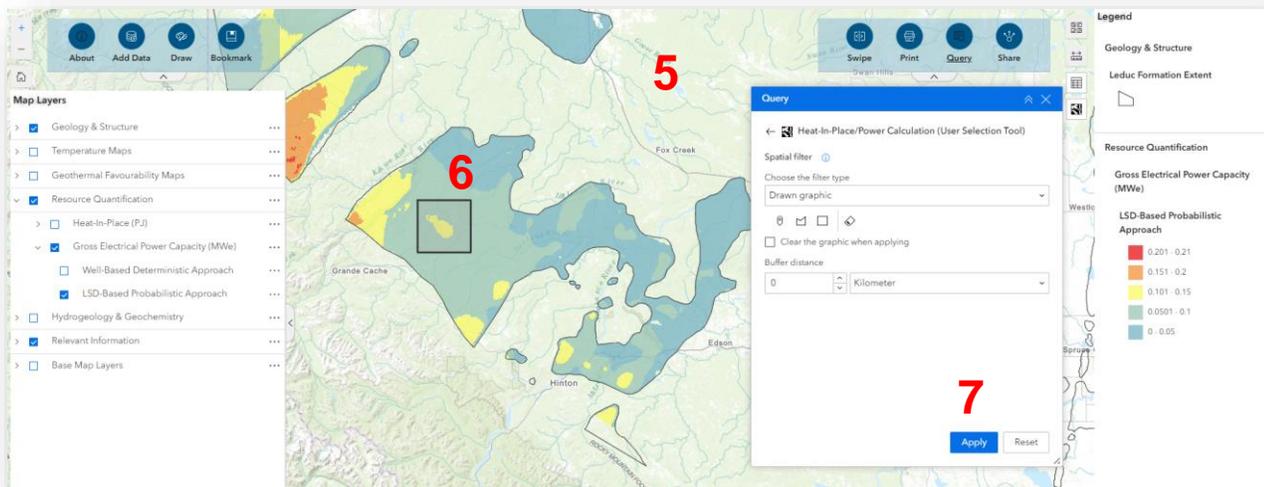
1. In the Map Layers widget, turn on the Gross Electrical Power Potential layer in the Resource Quantification section.
2. Turn on the “LSD-Based Probabilistic Approach” layer and click the Query widget to display the “Heat-In-Place/Power Calculation (User Selection Tool).”
3. Click the query tool to activate the tool Heat-In-Place/Power Calculation (User Selection Tool).



# How to Use the Summary Statistics: Heat-In-Place & Power Calculation (User Selection Tool) Widget

## Steps

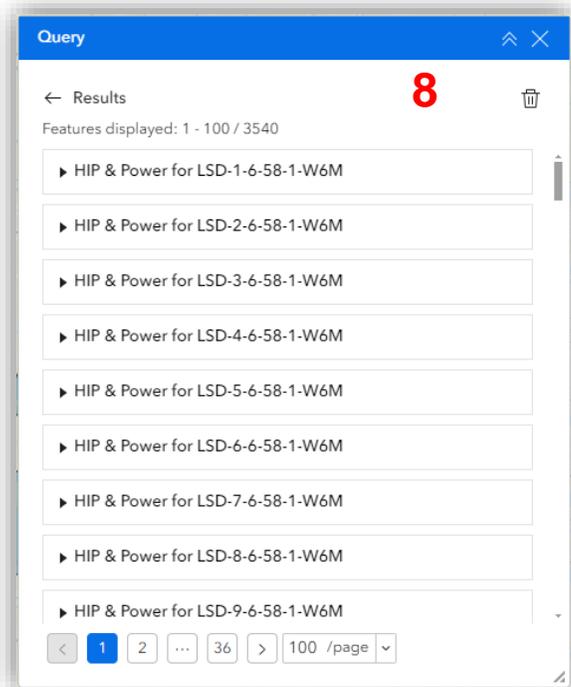
4. Select any draw graphic option of choice. In this example, use the “Draw a Polygon” graphic option.
5. Zoom into an area of interest in the map view to draw an area of interest.
6. Draw a polygon in any area of interest to obtain the Heat-In-Place and Gross Electrical Power summary statistics.
7. Click the Apply button.



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8. The Query dialogue box is populated with the summary statistics of the HIP and Power per Legal Subdivision (LSD) grids contained within the user-defined area of interest presented in step 6.
9. To display the HIP and Power Summary stats for the selected area, click the “Heat-In-Place & Power Calculation (User Selection Tool) Widget.” 



## Summary Statistics - Heat-in-Place / Power Estimates

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### Heat-In-Place per Unit Area (PJ/km<sup>2</sup>)

Minimum: 70.74 PJ/km<sup>2</sup>

Maximum: 89.41 PJ/km<sup>2</sup>

Mean: 83.94 PJ/km<sup>2</sup>

### Gross Thermal Power per Unit Area (MWth/km<sup>2</sup>)

Minimum: 1.78 MWth/km<sup>2</sup>

Maximum: 2.25 MWth/km<sup>2</sup>

Mean: 2.09 MWth/km<sup>2</sup>

### Gross Electrical Power per Unit Area (MWe/km<sup>2</sup>)

Minimum: 0.48 MWe/km<sup>2</sup>

Maximum: 0.66 MWe/km<sup>2</sup>

Mean: 0.6 MWe/km<sup>2</sup>

### Required Brine Flow Rate per MWe (m<sup>3</sup>/hr/MWe)

Minimum: 102.78 m<sup>3</sup>/hr/MWe

Maximum: 129.06 m<sup>3</sup>/hr/MWe

Mean: 110.77 m<sup>3</sup>/hr/MWe

Please run the “Heat-In-Place / Gross Power Summaries (User Selection Tool)” query to display the statistics summary of the selected area of interest.

**NOTE:** The summary report encompasses results for all LSDs intersected by the user-selected area which may be the same or smaller than the total area of these LSDs.

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10. Click the collapse button at the bottom of the map window to expand the attribute table, which hosts the “Heat-In-Place / Power (User Selection Tool) results” attribute table.

Geothermal Atlas of Alberta - Leduc Formation

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Search for city, town, county

Legend

Geology & Structure

Leduc Formation Extent

Temperature Maps

Temperature (°C) at Base of Leduc Formation

- 160.1 - 170
- 140.1 - 160
- 120.1 - 140
- 100.1 - 120
- 80.1 - 100
- 60.1 - 80
- 40.1 - 60
- 35 - 40

Geological Attributes (User Selection Tool) result output view

Heat-in-Place / Power (User Selection Tool) result

PID	Description	Geological Unit	Area of LSD (km2)	Mean HIP per Unit Area (MWe/km2)	Required Brine Flow Rate per MWe (m3/hr/MWe)	Mean Gross Electrical Power Capacity per Unit Area (MWe / km2)
60205807050	LSD-05 SEC-07 TWP-...	Leduc Formation	0.157256706	78.96570426	109.7990018	0.565645979
60205807060	LSD-06 SEC-07 TWP-...	Leduc Formation	0.16130241	79.53523909	110.0440334	0.567235724
60205807070	LSD-07 SEC-07 TWP-...	Leduc Formation	0.161304982	80.02814595	110.0938578	0.56822964
60205807100	LSD-10 SEC-07 TWP-...	Leduc Formation	0.161294734	80.68707201	110.281393	0.572249809

Total: 1,273 | Selection: 0

# Adding Data to the Atlas

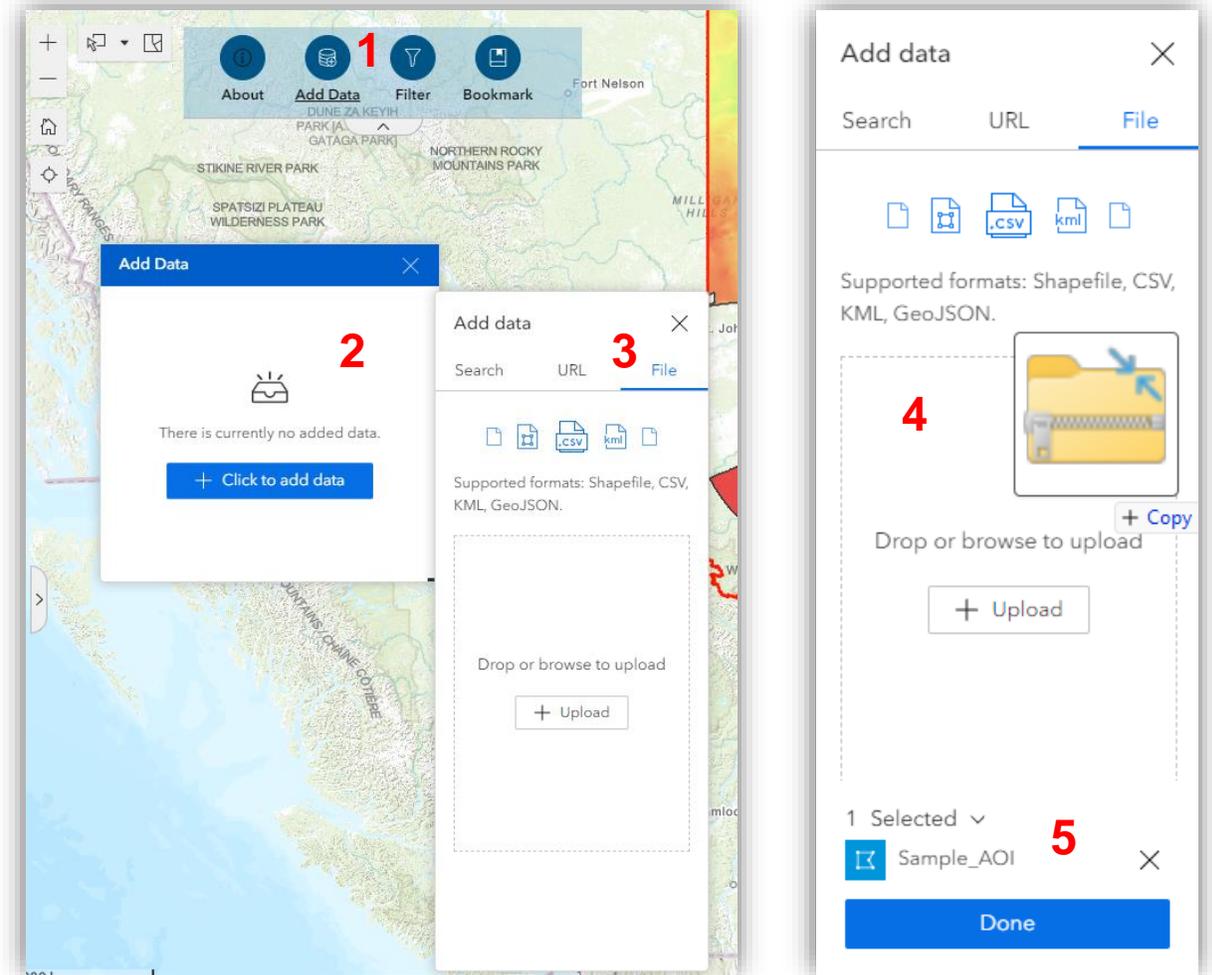
The Add Data widget allows users to load and view their data as overlays on the data layers in the Geothermal Atlas.

Users can map .csv, .geojson or shapefiles on the web map.

In this user guide, instructions on how to overlay personal shapefiles to the web interface of the Geothermal Atlas are outlined in the steps below:

## Steps to add shapefile

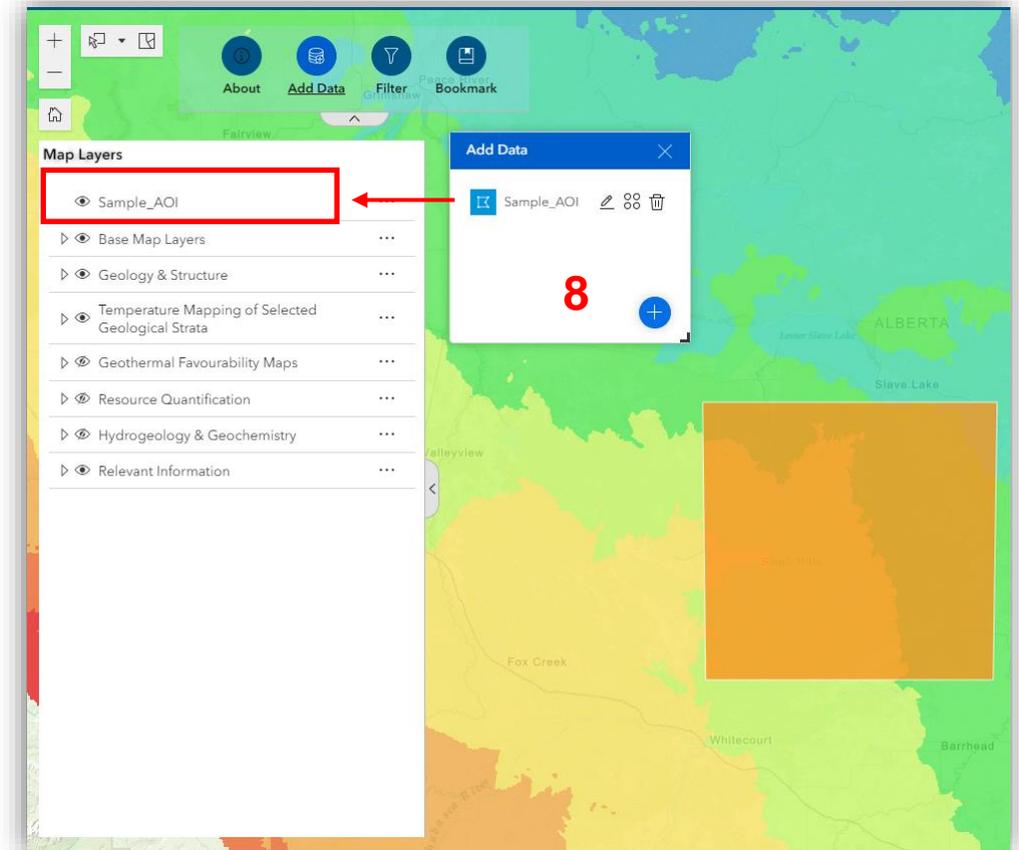
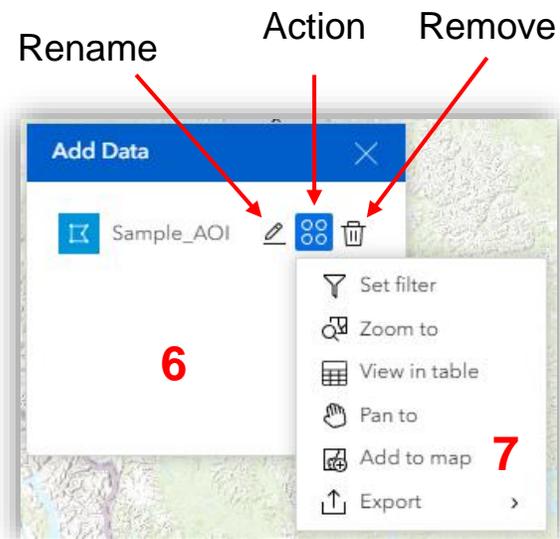
1. Click the “Add Data” widget to access this tool.
2. In the Add Data pop-up window, click the “Click to add data” button.
3. To add a shapefile, select the “File” tab.
4. Ensure the shapefile to be added is zipped. Drag and drop or browse to the location of the zipped shapefile folder on your computer and add this to the atlas.
5. Click the Done button to add your shapefile to the Add Data window.



# Adding Data to the Atlas (contd.)

## Steps to add shapefile

6. The “Add Data” widget allows users to implement several operations to a data layer added to the atlas. For example, the user can Rename, Remove, or perform different operations such as *Set filter*, *Zoom to*, *View in table*, *Pan to*, *Add to map*, and *Export* the added layer.
7. To overlay the imported shapefile to the map interface of the atlas, select “*Add to map*” Action.
8. Step 7 allows the user to overlay the imported shapefile on the existing layers in the map interface of the atlas. This adds the shapefile to the Map Layers widget.



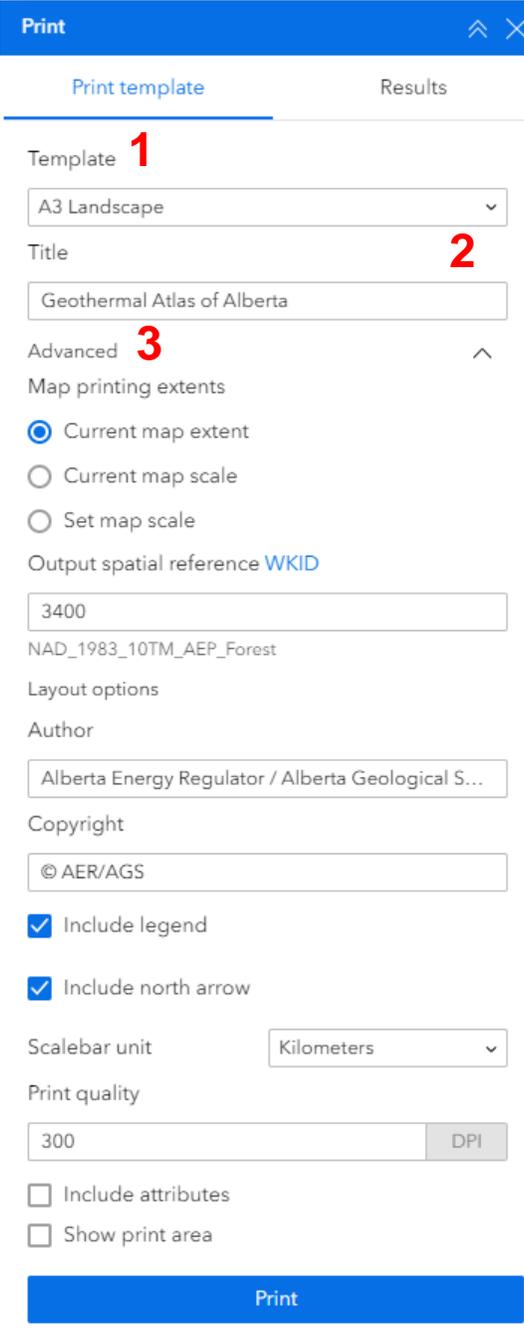
# Using the Print Widget

The Print widget allows the current map view to be saved to a PDF file for printing.

Using the Print widget:

1. Enter a title for the map in the **Title** text box or use the default name Geothermal Atlas of Alberta.
2. Select the desired printed map size in the **Template** section.
3. Click Advanced to expand and access advanced print options.

The **Map printing extents** section defines the method the application should use to calculate the printed extent of the map. Choosing the **Current map scale** option causes the printed map to maintain its scale and may change the map extent around the centre point to fit the printed page. Choosing the **Current map extent** option may cause the scale to change to fit the current map extent into the printed page. You may also force a specific scale by selecting the **Set map scale** option and entering a scale; click the round arrow icon on the right to populate the box with the present scale of the map.



The screenshot shows the 'Print' widget interface. At the top, there are tabs for 'Print template' and 'Results'. The 'Print template' tab is active. The interface is divided into several sections:

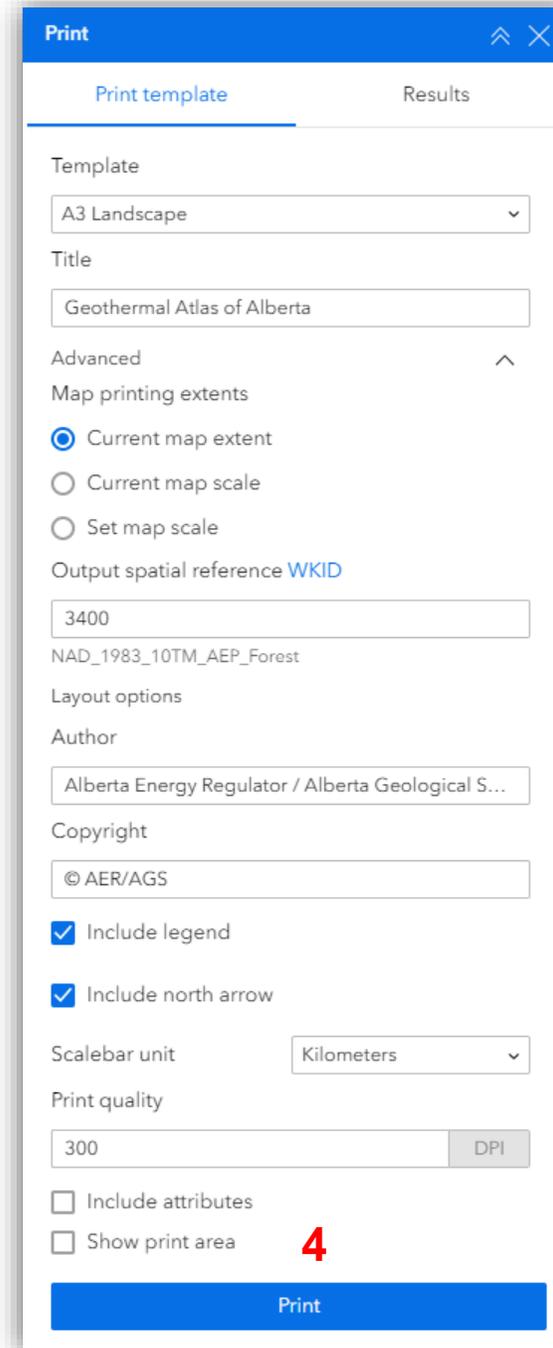
- Template** (labeled with a red '1'): A dropdown menu showing 'A3 Landscape'.
- Title** (labeled with a red '2'): A text input field containing 'Geothermal Atlas of Alberta'.
- Advanced** (labeled with a red '3'): A section with an expand/collapse arrow icon.
- Map printing extents**: Three radio button options: 'Current map extent' (selected), 'Current map scale', and 'Set map scale'.
- Output spatial reference** (labeled 'WKID'): A text input field containing '3400'.
- Layout options**: A section with several text input fields: 'Author' (containing 'Alberta Energy Regulator / Alberta Geological S...'), 'Copyright' (containing '© AER/AGS'), and 'Scalebar unit' (a dropdown menu set to 'Kilometers').
- Print quality**: A text input field containing '300' and a 'DPI' button.
- At the bottom, there are two checkboxes: 'Include attributes' and 'Show print area', both of which are unchecked.
- A large blue 'Print' button is located at the bottom right of the widget.

# Using the Print widget

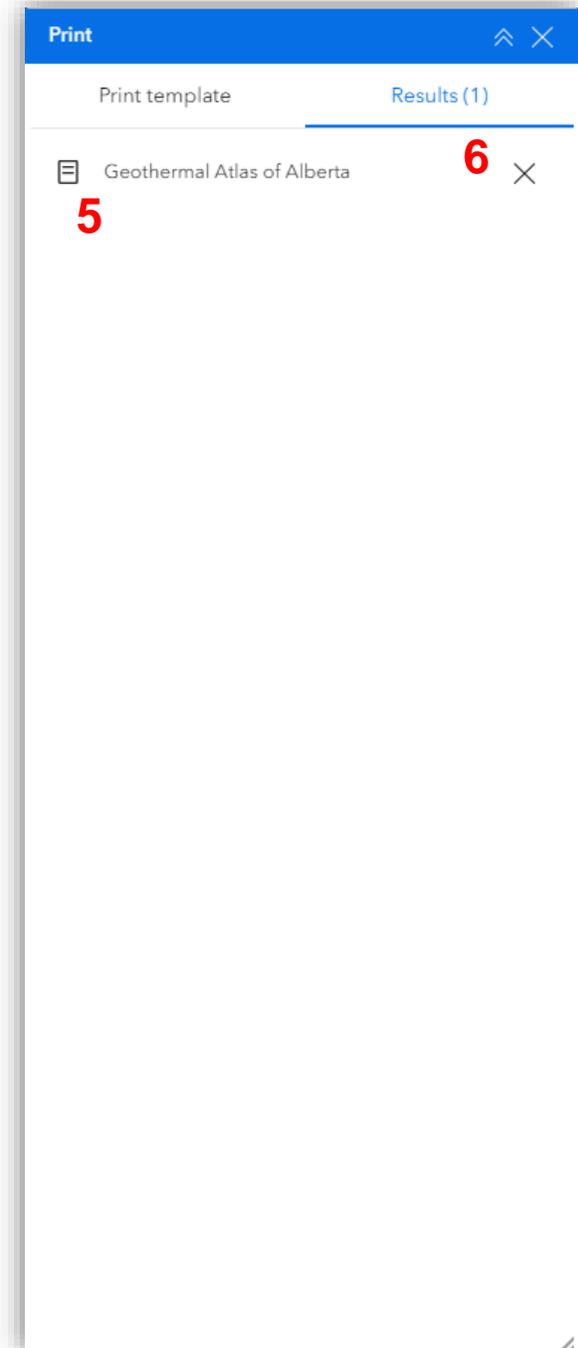
The **Layout** options section allows you to include a legend and north arrow in the printed map.

The **Print quality** section allows you to set the resolution of the printed map by providing a DPI (dots per inch) value in the text box.

4. After all options have been set, click the **Print button** to submit the information to the print service. A spinning wheel in the Print result section will indicate task progress.
5. Upon completion, a print link is displayed in the **Print** result section. Click the link to open the print file in a new browser window.
6. Click the x icon on the right corner of the link to delete it.

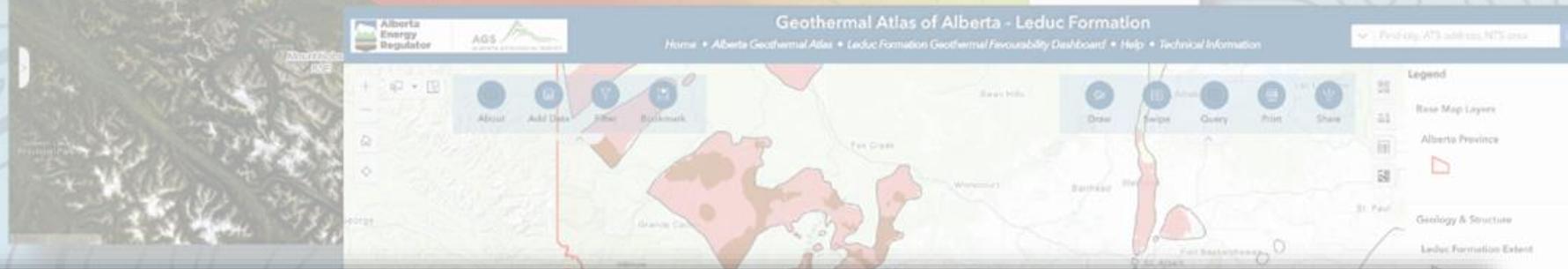
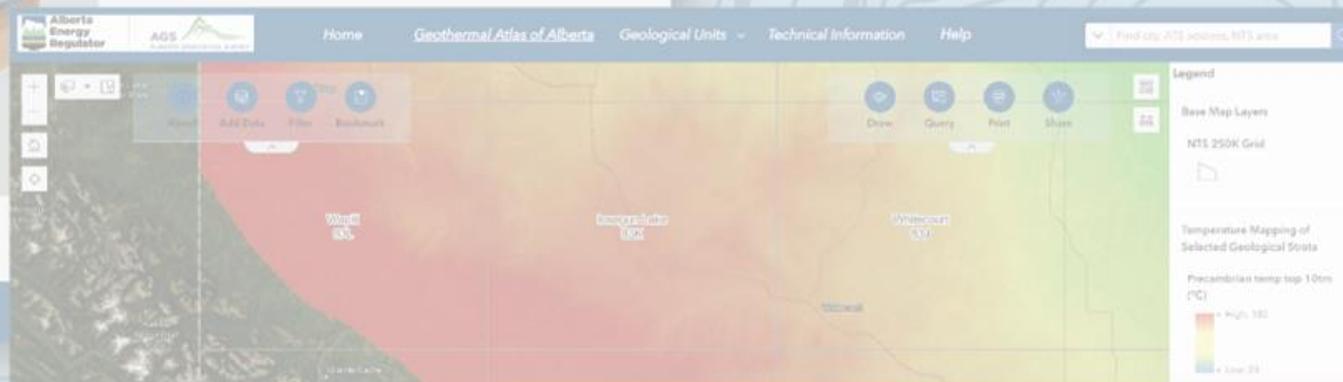


The screenshot shows the 'Print' widget configuration panel. It has a blue header with 'Print' and expand/collapse icons. Below the header are two tabs: 'Print template' (selected) and 'Results'. The 'Print template' section includes a 'Template' dropdown set to 'A3 Landscape', a 'Title' text box containing 'Geothermal Atlas of Alberta', an 'Advanced' section with 'Map printing extents' options (radio buttons for 'Current map extent', 'Current map scale', and 'Set map scale'), an 'Output spatial reference' text box with '3400' and 'NAD\_1983\_10TM\_AEP\_Forest', 'Layout options' for 'Author' (text box with 'Alberta Energy Regulator / Alberta Geological S...') and 'Copyright' (text box with '© AER/AGS'). There are two checked checkboxes: 'Include legend' and 'Include north arrow'. A 'Scalebar unit' dropdown is set to 'Kilometers'. The 'Print quality' section has a text box with '300' and a 'DPI' label. At the bottom are two unchecked checkboxes: 'Include attributes' and 'Show print area'. A large blue 'Print' button is at the very bottom.



The screenshot shows the 'Results' section of the 'Print' widget. It has a blue header with 'Print' and expand/collapse icons. Below the header are two tabs: 'Print template' and 'Results (1)' (selected). The 'Results (1)' section shows a single print job: 'Geothermal Atlas of Alberta'. To the left of the job name is a red number '5' and a document icon. To the right is a red number '6' and a close 'X' icon.

# Technical Information



## Email Us

For further information about the Geothermal Atlas of Alberta, please contact us by email at:

 [AGS-Info@aer.ca](mailto:AGS-Info@aer.ca)