

Aladdin Instructions

Access Aladdin

Use your Chrome or Edge browser to open the home page <https://intofuture.org/aladdin.html> (Firefox is OK, but it tends to be slower). Browse the page for general information about Aladdin and the resources available for use. If you want to open the app, click the Aladdin link in the Entrance section on the right side of the page.

In this hands-on session, we will use **solar farm design** as an example. We will compare three different design paradigms: traditional, parametric, and generative.

The design problem is defined in this [original Aladdin file](#) (modeling the famous Rainbow Swash in Boston). All the solar panels must be placed within the two areas specified by the two polygons. You can pick either one of the areas to design a ground-mounted solar panel array (aka solar farm). The tall cylinder may affect the energy output..

Try traditional design

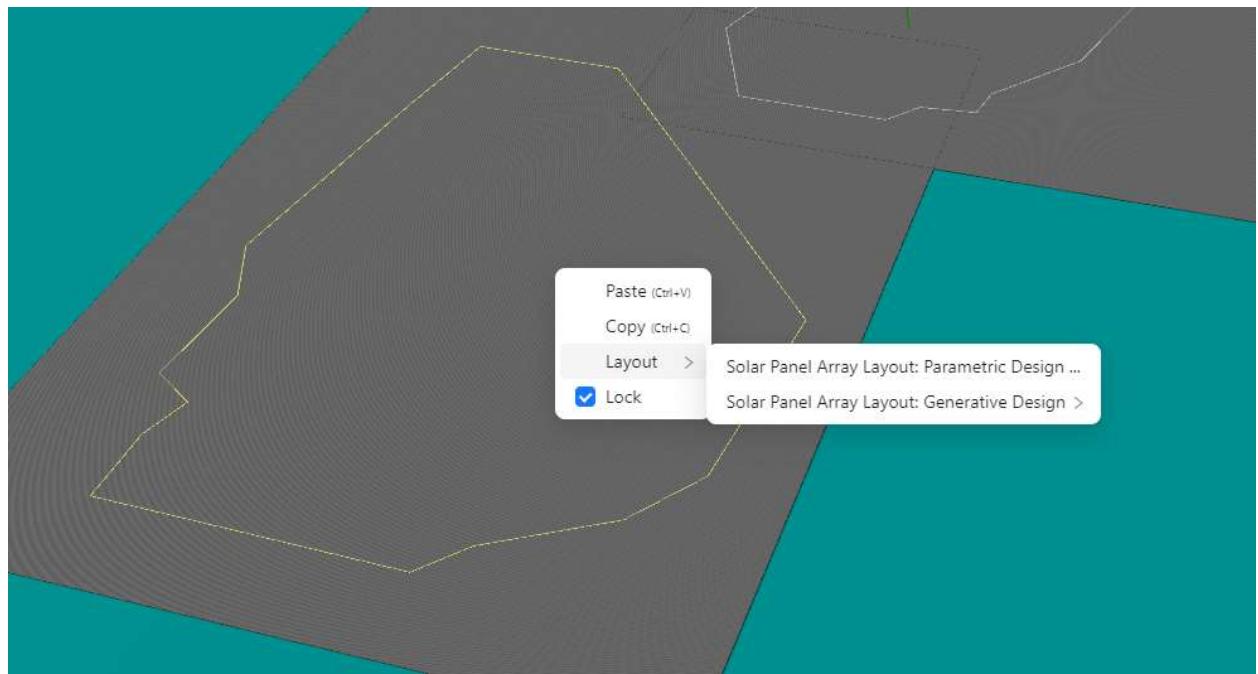
Follow these steps to design and analyze:

1. Manually add solar panels row by row
2. Make sure that all the rows are within the polygon
3. Adjust the tilt angles and the inter-row spacings
4. Run analysis for each configuration or improvement
5. Repeat the above steps until we are happy with the solution

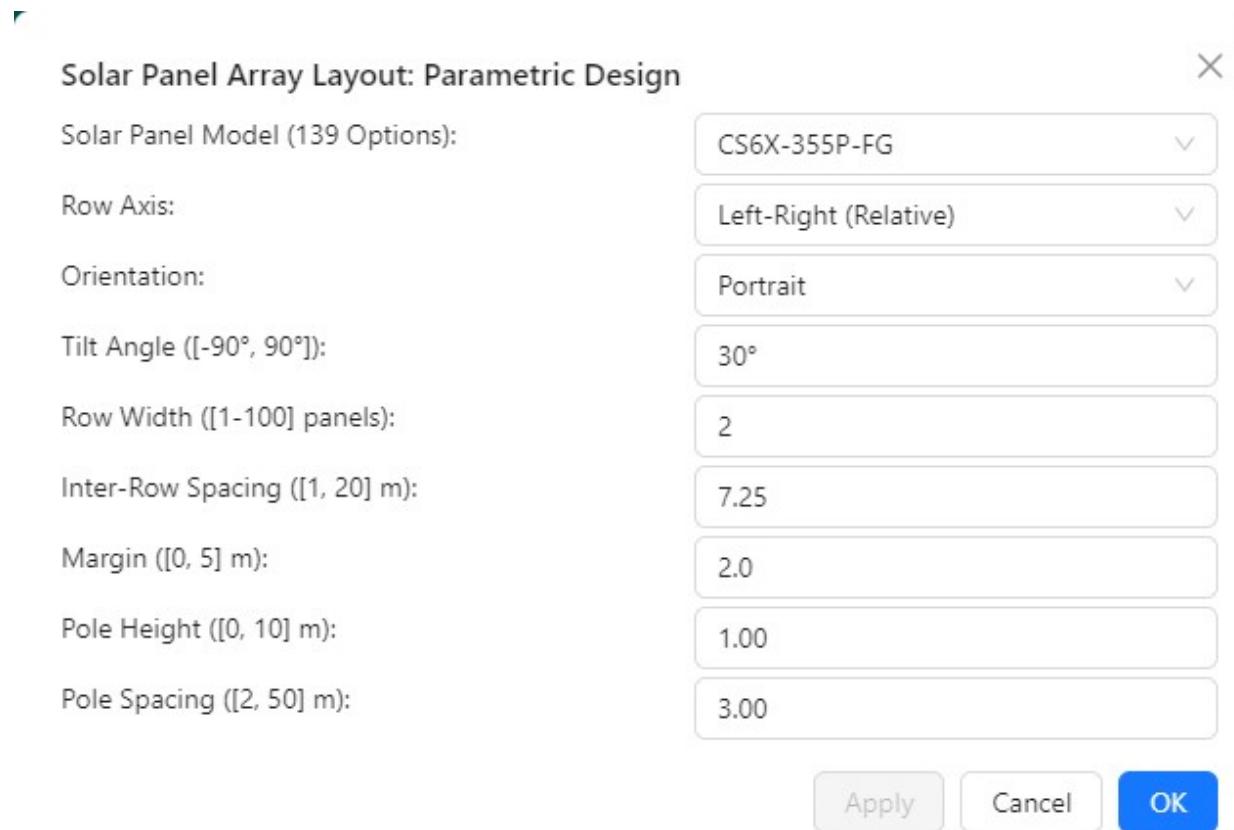
Try parametric design

Follow these steps to design and analyze:

1. Right-click on the polygon and select “Layout > Solar Panel Array Layout: Parametric Design...”



2. Choose applicable parameters with the Parametric Design wizard shown as follows and then click OK:

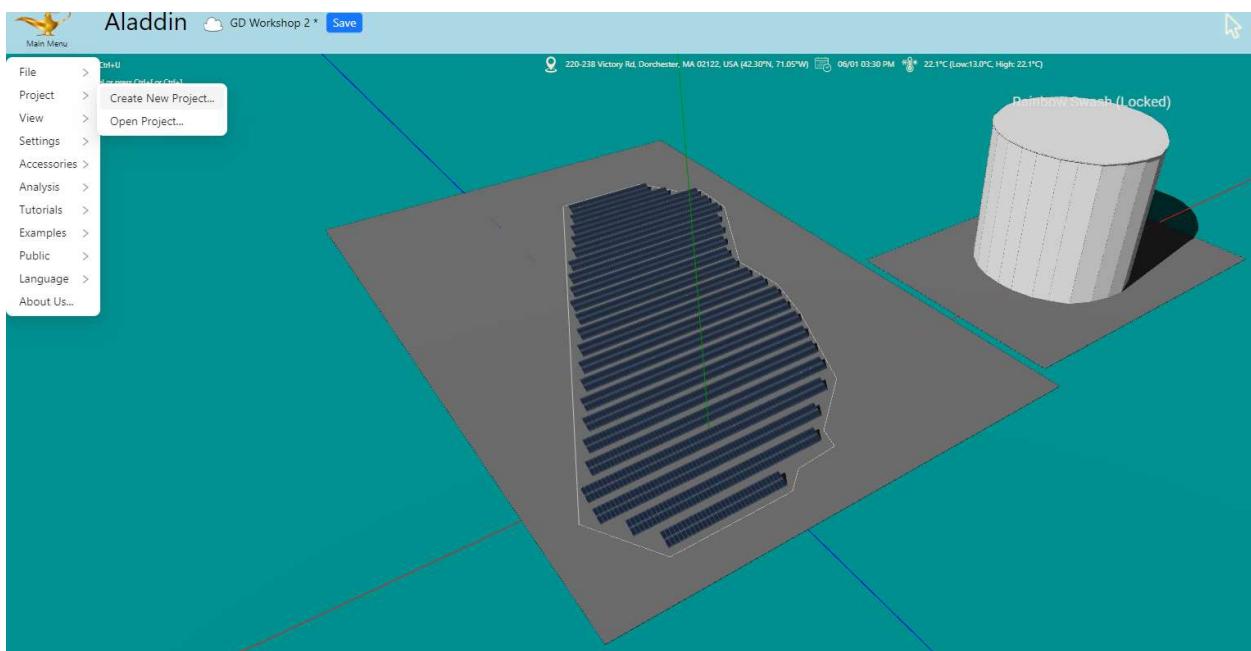


3. Run analysis for each configuration.
4. Compare the results of different configurations and pick a good one
5. Repeat the above steps until we are happy with the solution

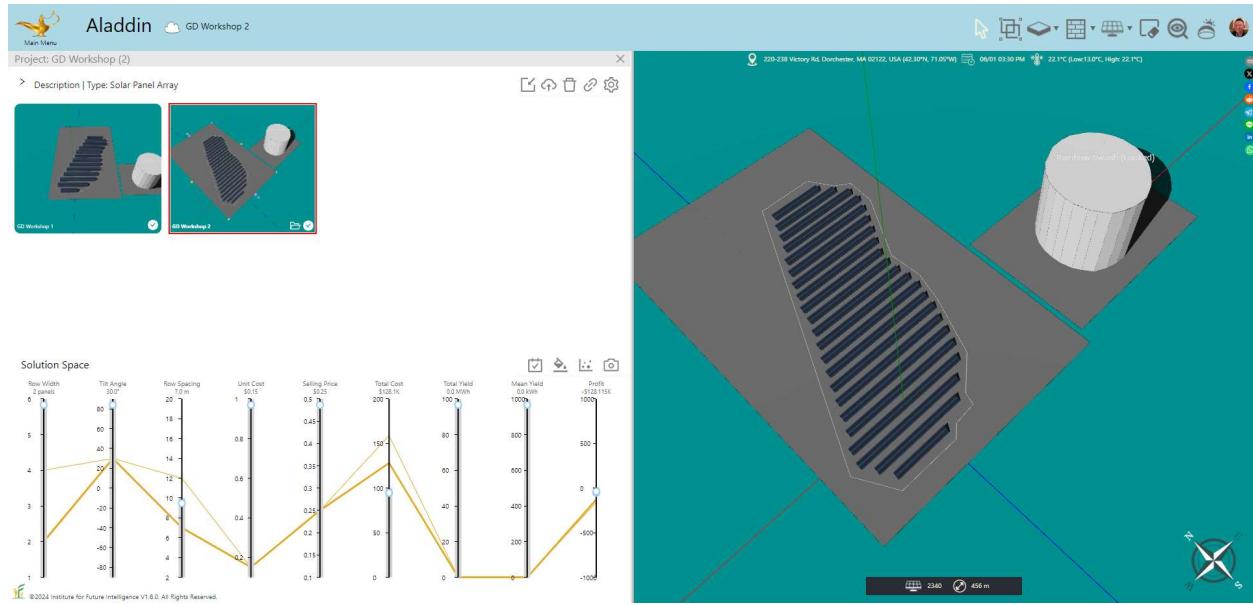
Try generative design

Follow these steps:

1. Create a new project in Aladdin



2. Create new designs with different initial conditions or assumptions (e.g., different investment and operational costs and electricity selling prices) and add them to the gallery



(Open this link to a [project](#) that has been created as an example).

3. Use GA or PSO to optimize each design and update them as needed
4. We end up with a set of solutions optimized for each condition
5. Use visual analytics to compare them and choose the best
6. To speed up the simulation, increase the grid cell size and skip the animation

Aladdin GD Workshop 2 * Save

Main Menu

File > Workshop (2)

Project > Type: Solar Panel Array

Edit >

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Examples > Solar Panel > **Analyze Daily Yield**

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Analyze Yearly Yield

Energy Analysis Options >

Analyze Visibility

Visibility Analysis Options >

Analyze Daily Yield

Analyze Yearly Yield

Energy Analysis Options >

Analyze Visibility

Visibility Analysis Options >

Sampling Frequency: 1 Times per Hour

12 Days per Year

Panel Discretization: Approximate

Grid Cell Size: 2.00 m

No Animation for Solar Panel Simulation:

Solution Space

Row Width: 2 panels

Tilt Angle: 30.0°

Row Spacing: 7.0 m

Unit Cost: \$0.15

Selling Price: \$0.25

Total Cost: \$128.1K

Total Yield: 0.0 MWh

Mean Yield: 0.0 kWh

Profit: -512.115K