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CleanUp by ThomThom

Find high-poly items

Find high file size items

AGILE SKETCHUP MODELING

Want to keep your SketchUp File size low and ensure that it renders quickly as you use it?

This guide is best used for prevention. However, for optimizing already-slow models, start with slides 1, 2, 3, 12, 13, and 16-18, but then go back and read the rest, too!

This was originally compiled as a resource for a personal client, not for the public, so at that time, I didn't keep track of the various webpages which inspired some of these points of research. Therefore I give grateful credit and thanks to the entire SketchUp community for much of the content of these slides, as well as for the community's spirit of sharing and support, from which I've learned so much over the years. Feel free to share this compilation, and to comment on the slides if you have any further tips to add!

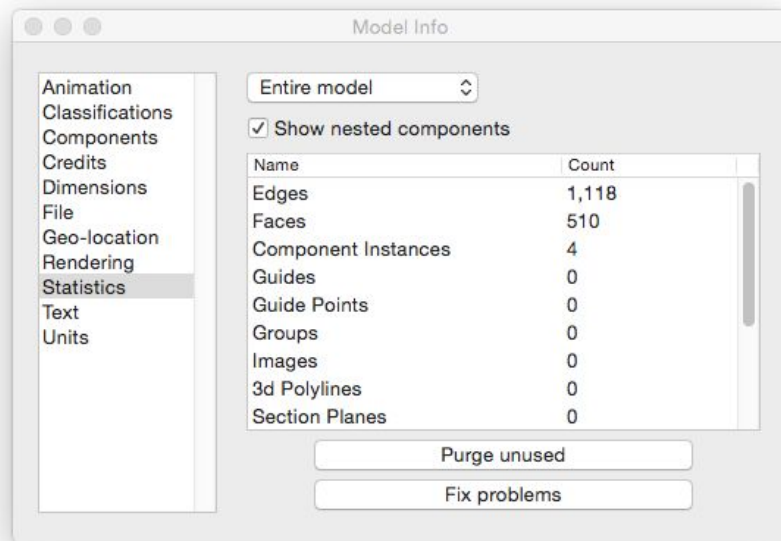
-K Kean

If you are reading this in PDF format, check for the latest version here:

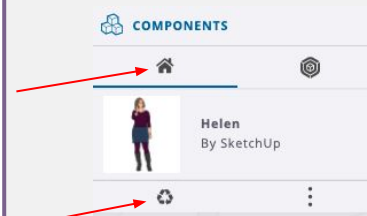
https://docs.google.com/presentation/d/15iZ_SYGVJcbvHMZJTRiPdZDS5izGibjalp1KDpN-rJM/edit?usp=sharing

Purge Unused

- Deleting things from the model doesn't delete them from the model file.
- Go to Window>Model Info>Statistics>Purge Unused to get rid of deleted Components, Styles, Layers, and Materials.
- Do it before every big save to reduce file size in SketchUp.



In app.sketchup.com, the Purge buttons are in the home 🏠 tabs of Materials and Components. The purge button looks like a recycle icon, with three arrows in a triangle.



This is very important.

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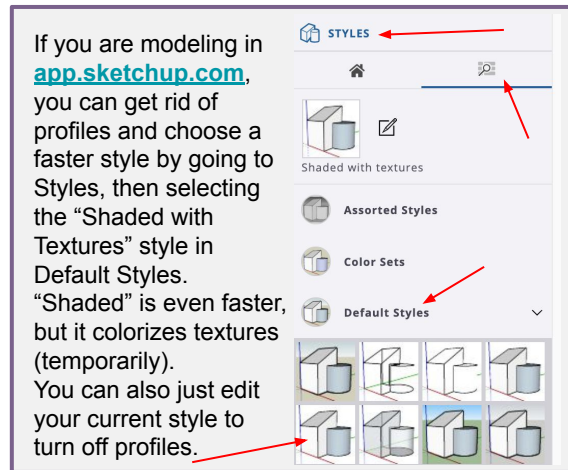
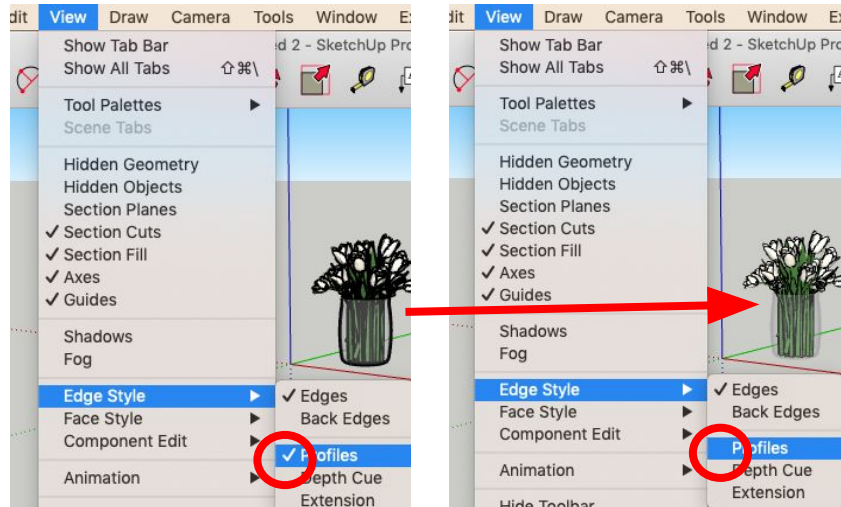
CleanUp by ThomThom

Find high-poly items

Find high file size items

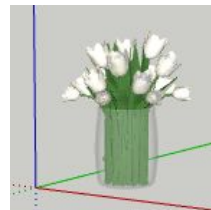
Styles

“Profiles” really slow down your model and can make things look weird and cartoonish. Try turning them off and then updating the style and updating the Scene to save that new Style, if applicable.



Doesn't that look better? It speeds up your model, too!
Make sure to save the new style and update existing scene styles.

Tip for vegetation: an extension called “[Hide Edges](#)” makes plants look much better:



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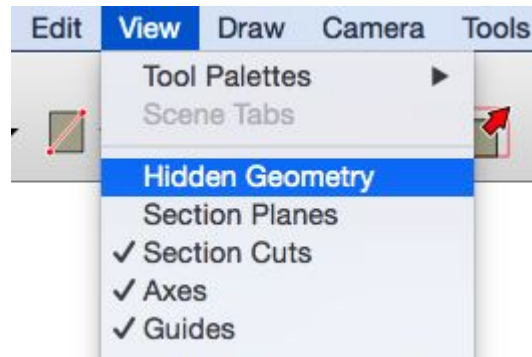
Find high file size items

Styles

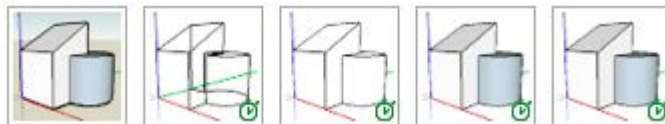


If needed, switch to the “Shaded” style while building geometry, as textured materials can slow down rendering.

Turn off hidden geometry when not editing hidden lines.



Use a “fast modeling” style when building the model and save it for your “Working” scene.



A green clock means fast performance!

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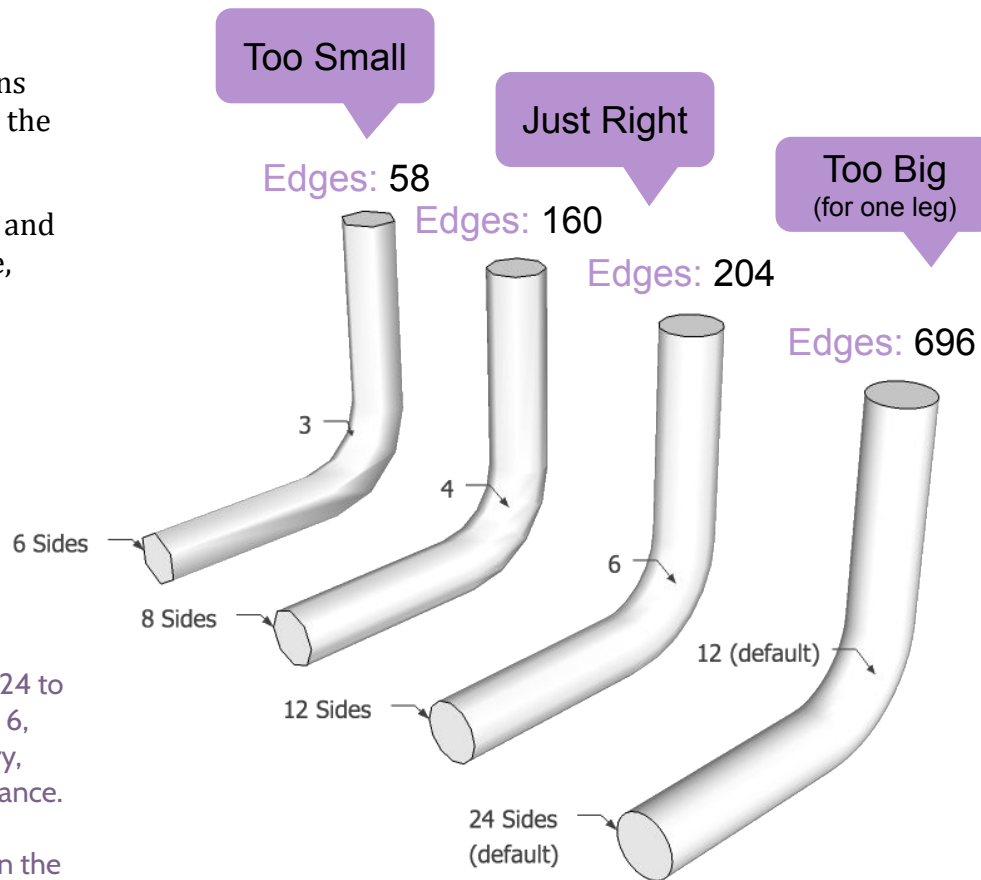
Find high-poly items

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Complexity

- Use the minimum polygons required to communicate the essential information.
- Reduce segments on arcs and circles whenever possible, especially if they will be extruded.

Reducing the circle segments from 24 to 12, and the arc segments from 12 to 6, results in a 70% savings in geometry, while maintaining a smooth appearance. This segment reduction drastically improves rendering, especially when the component is repeated.



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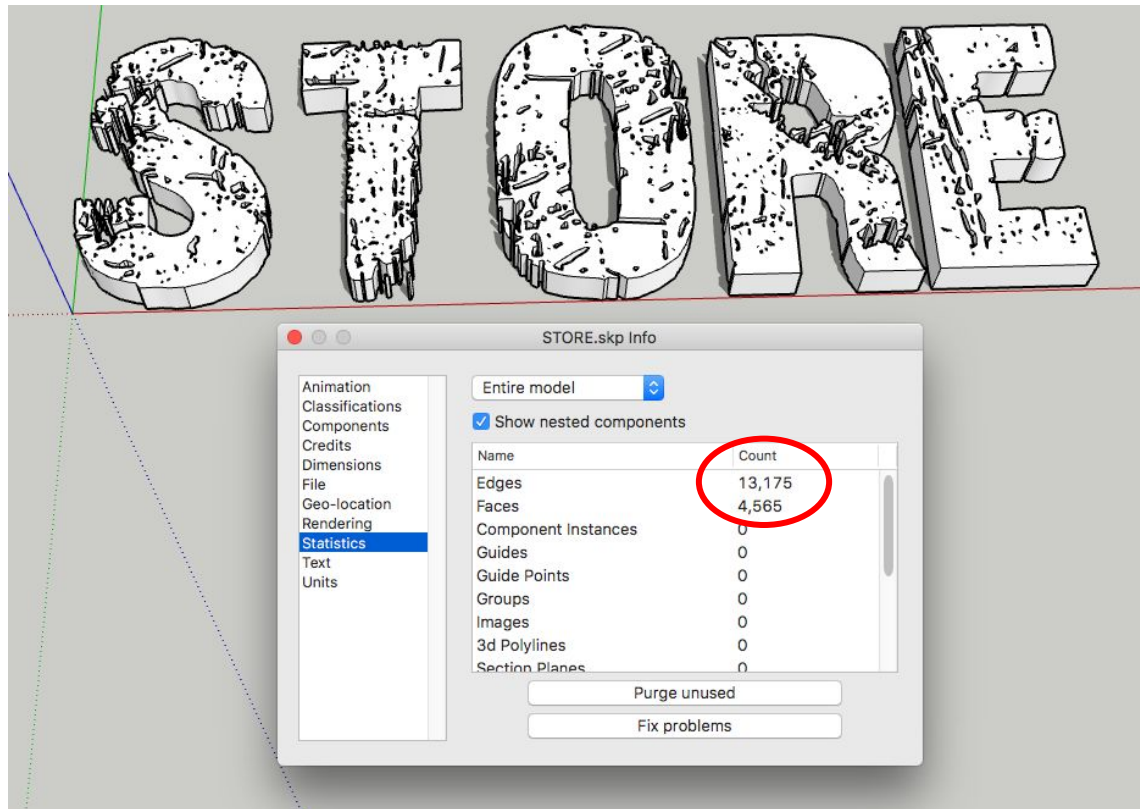
Computer

CleanUp by ThomThom

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Complexity in 3D Text



Complex fonts can produce crazy-high edge counts, thus slowing down your model, so choose plain fonts instead.

A simple version of this sign model only had about 500 edges (instead of 13,000).

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Materials



- Examine image file sizes before importing. Pre-crop and resize images before importing them into the model.
- Install and use the Materials Resizer extension from the Extension Warehouse in SketchUp (under the Windows menu).
- For some imported photographs it helps to right-click on model surface and select “Make Unique Texture” to further crop and reduce pixels. Undo this step if it makes it too blurry.
- Use .jpg files wherever possible for imported tiling images, as they often have smaller file sizes than pngs. Some exceptions are site maps, logos, and images with transparencies.
- Don’t choose a tiling image file when a flat formulaic color will do. Example: You can usually use a flat shade of grey instead of “brushed aluminum.”
- Don’t add decorations to a client’s model, such as wall art, unless asked to.

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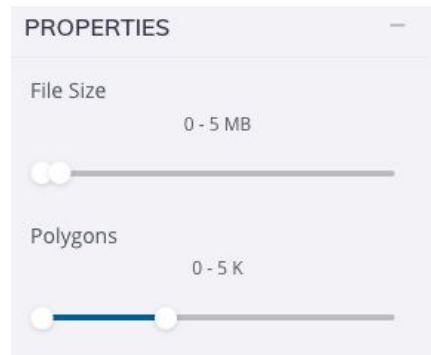
Find high-poly items

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Imported Components






- Only download a component/model from the [3D Warehouse](#) after you have checked the file size and the edge count. Shop around a little, it's worth it.
- Use the component with the smallest file and edge count that will do the job.
- You can always trade up to a higher quality component later with a "select/replace" technique.

After searching, adjust the sliders!








This tree file size is huge. Aren't you glad you checked before downloading?



  Download	
	
	
Downloads	207
Likes	1
.skp File Size	38.5 MB
Polygons	83,865
Materials	2
Uploaded	6/25/15
Last Modified	6/25/15

This tree file size is much more reasonable.



  Download	
	
	
Downloads	2,309
Likes	1
.skp File Size	196.4 kB
Polygons	22
Materials	1
Uploaded	7/13/10
Last Modified	3/21/14

Tip: [LandFX](#) makes nice lower-poly vegetation models

Improves: File Size & Rendering

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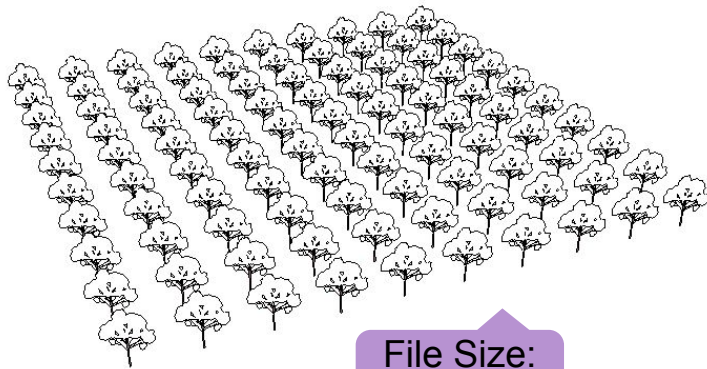
CleanUp by ThomThom

Find high-poly items

Find high file size items

Components instead of Groups

- Make Components instead of Groups whenever an object might repeat, or ever be used in another model.
- Groups are great for grouping together components, such as grouping the landscaping elements together.



File Size:
164 kb

A model with 100 of the same tree component isn't much bigger in file size than a model file with only 1 tree component.



File Size:
101 kb



File Size:
135 kb

Even if the component instances are flipped, rotated, colored from the outside, or scaled, the total file size stays small.

Improves: File Size

Purge

Styles

Edge Count

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Save

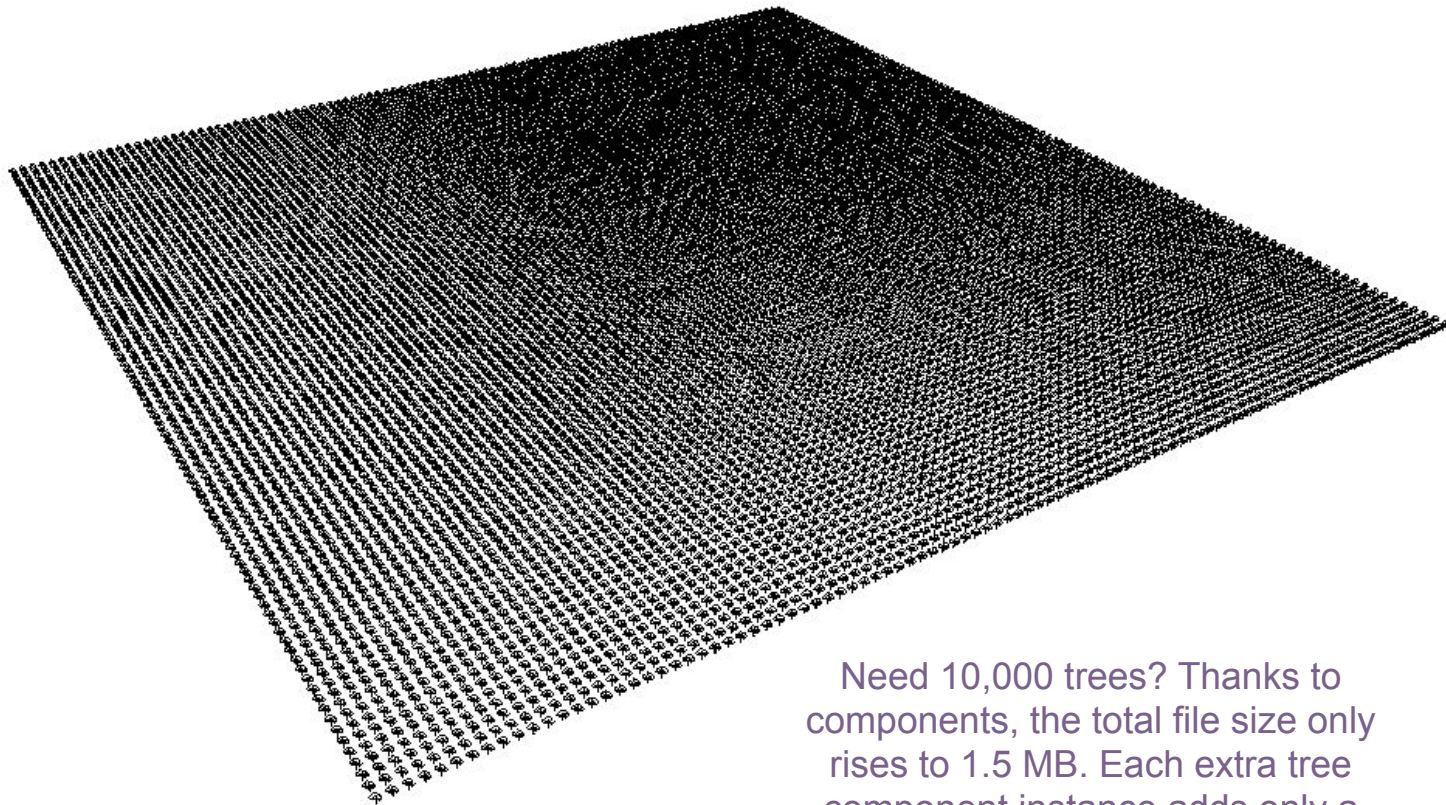
Terrain

Computer

CleanUp by ThomThom

Find high-poly items

Find high file size items



Need 10,000 trees? Thanks to components, the total file size only rises to 1.5 MB. Each extra tree component instance adds only a fraction of a kilobyte.

Improves: File Size

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CleanUp by ThomThom

Find high-poly items

Find high file size items

Stand-In (Proxy) Components

- Save a complex component to your hard drive as a reference back-up.
- In the model, edit and simplify that component to a few lines, or a rectangle, so that it renders more easily than the “real” component.
- Later, when it’s time to present the model, right click on the component in the model and select Reload.
- In the Reloading navigation folder, find the saved component on your computer and select it.

The Select/Replace technique works just as well.

- Use a low-poly tree, for example, until it is time to present the model.
- When it’s time to show the model, import a high-poly model into the file (place it anywhere).
- Select all of the low-poly components.
- In the Components Window, right-click on the high-poly component and select “Replace Selected.”
- Delete the first randomly placed high-poly component.

Improves: Rendering While Modeling

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Visible Tags (Layers)

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Save

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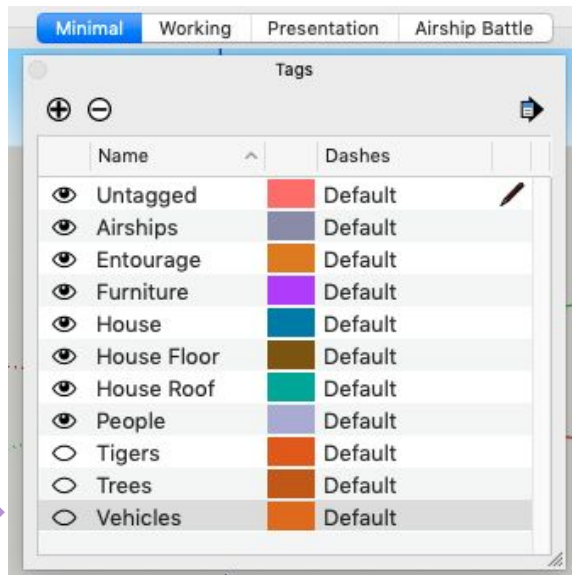
CleanUp by ThomThom

Find high-poly items

Find high file size items

Turn Off as many Tags (formerly Layers) as possible for various Scenes

If the model is acting sluggish, try hiding tags you don't need to see right then.



Save a "Minimal" Scene Tab with non-essential Tags turned off so that you can quickly return to it, and Save the model in that Scene before closing the file so that the file will open easily the next time around.

Want to learn more about Tags? [Check out this article.](#)

Improves: Performance

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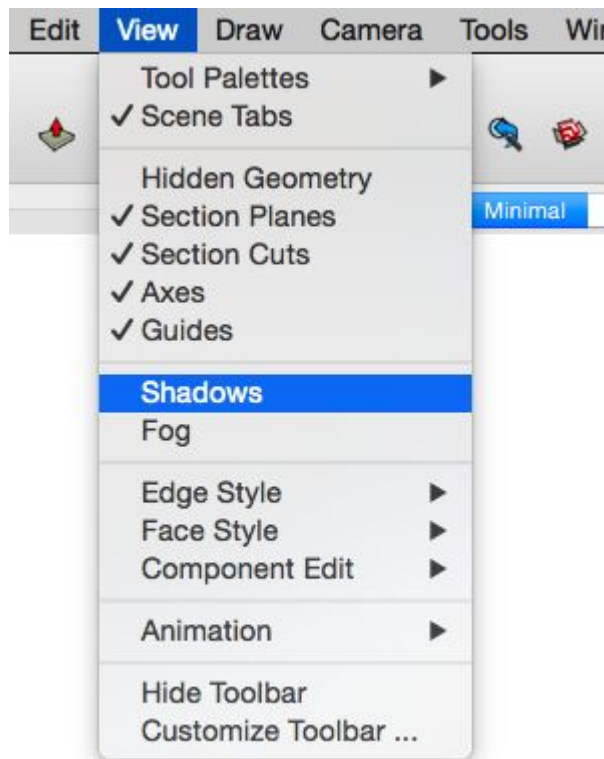
CleanUp by ThomThom

Find high-poly items

Find high file size items

Turn Off Shadows and Fog

- If the model is acting sluggish, turn off shadows and fog while working on the model, and before saving.
- Save the “Working” or “Minimal” scenes without shadows or fog for quick modeling modes.
- Save specific Scene Tabs with Shadows or Fog only for quick presentation views, if the model complexity is small enough to render shadows.



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Save

- Save the model quickly after loading a new material, component, or anything that rapidly increases file size.
- If you don't save the file after importing a large component, the file may possibly crash and you'll lose some work.
- This might be in my imagination, but I think that saving the model after importing components speeds up the performance.

Improves: (Possibly) Rendering. Also Sanity.

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Terrain

- Limit the terrain selection to essential areas.
- If context terrain is important, create an essential Terrain group and a contextual terrain group, and then hide all but the essential terrain while building the model.
- There are many ways to do this, with varying effects on file size, image quality, and rendering.

Improves: It Depends

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Close other Applications

Close any other computer applications that you don't need to have running. This might clear up some processing power.

Keep SketchUp updated

You can check whether a new version of SketchUp is available in SketchUp under Help > Check for update... (PC) or SketchUp > Check web for update (Mac).

Keep Your Graphics Driver updated and optimized (Windows Only)

1. If you have multiple video cards, you may need to set which one SketchUp or Layout uses. Please follow the steps found [here](#) (it has to be done for both SketchUp and Layout). You can also confirm which graphics card SketchUp is using from SketchUp's Preferences menu > OpenGL > Graphics Card Details.
2. Update your video card drivers: To find your graphics cards, right-click on your Windows button and select Device Manager, open up the Display Adapters item, and you'll see them there.
 - A. If there's an Intel graphics card, follow this link for instructions: <https://goo.gl/LV46Rk>.
 - B. If it's not Intel: <https://help.sketchup.com/en/article/36254>

If you run into issues with these graphics card instructions and can't follow them, please comment on this slide so that we can improve the instructions. If you *can* follow the instructions, but they just don't help, please follow up via your Support ticket, if you have the SketchUp Pro Support plan.

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CleanUp³ Extension by ThomThom

- One of the top extensions in the 3D Warehouse.
- Essential for many reasons, one of which is line reduction.
- Install [ThomThom's library extension](#) before getting [CleanUp³](#).

Many components in the 3D Warehouse are actually created in another program, and then imported into SketchUp. If you turn on hidden Geometry, you'll see all the extra stuff in there. CleanUp can get rid of lines that aren't serving any purpose. This reduces your polygon count, which makes everything better!

Note: If you run the extension on a full model, do it before you go to lunch, as it can take time to run through a complex model. For some huge models it might be best to run CleanUp on selected high-poly portions first, before running it on the entire model.

*** Also, if you are done with your guidelines, go to Edit > Delete Guides to further speed up your model.

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What if you have an oversized or slow model?

Part One: Find the High-Polygon items with the “Unbork” script

This script will check for the highest-polygon objects in your model, independent of object file size, so you can replace them with lower-poly objects that will render more easily. The script is found in the following document. Try it, it's fun!

<https://goo.gl/G1GmyW>

Improves: File Size & Rendering

What if you have an oversized or slow model?

Part Two: Find the high file size items

Sometimes a model seems much larger and slower than it should be. How can you clean it up and make it usable? One technique is to analyze the file sizes of the Materials and the Components. For Macs, it only works for Components, not Materials.

- Open the Materials or Components Window and hit the “In Model” icon (the little house button)
- Click on the Details button.
- Select the option for “Save Collection As”.
- In the file navigation window that pops up, navigate to a place you can find the new folder later (I just use the desktop), create a new folder in which to put the collection, and select the folder (don’t open it, just select it). Create the collection. Wait a minute (or a few).
- Outside of SketchUp, open up the new folder and set the view to Details View.
- In the file folder, sort the Materials/Components by size so you can see the largest ones.
- If any of the sizes look too large, you then would want to find that material/component in the model and either delete, replace & purge it, or else edit the material in an imaging editing program to be a smaller pixel size version of itself.

Many components will be groupings of components, so ignore those and focus on size of the inner single-component items. It helps visually to switch the folder view to Large Thumbnails once the list is sorted by file size.