Creating BodySlide Conversion for the Fusion Girl Body

An extensive Guide for Modders and Creators trying to convert Outfits

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August 2019

Contents

1 | Introduction

Hello there and welcome to my guide on doing BodySlide Conversions for the Zex - Fusion Girl body. My name is **erri120**, I've been modding my games for over 6 years now and released more than 25 conversions on the Nexus.
This guide is intended for modders or creators who have a decent amount of modding experience and want to start creating conversion for the Fusion Girl body. We will go through the process of setting up a suitable work environment, getting to know the tools, converting different types of outfits, testing these conversions and publishing them to the Nexus.
The project files containing the source code and all pictures can be found on the Nexus mod page. I recommend starting at section **2** and reading to the end of subsection **3.2.1**. The In-Depth example will give you a good starting point and enough experience to start creating your own conversions. You will also find tips for converting different types of outfits and a complete sliderlist in this guide.
One last thing before you go and rush through this whole thing: you will need **patience** if you want to create good conversions. It can sometimes take a lot of time but I will give you hints and my personal experience on how you can reduce that time. Some conversions I did:






2 | Requirements

With that introduction out of the way we can get down to business. In this section we will download all necessary programs, mods and assets you may need. All of them *(except the game)* are free and most are also open source. **BEFORE** you go and download everything in the list below, read the instructions first.

Name	Download
Fallout 4 (all DLCs)	Steam
Mod Organizer 2	Nexus/Github
BodySlide and Outfit Studio	Nexus
FO4Edit	Nexus/Github
zEdit	Github
NifSkope (optional)	Sourceforge/Github
Blender 2.8 (optional)	Blender/Steam

Fallout 4 is a no brainer but **you need all DLCs** for modding. A huge amount of mods on the Nexus do not support a bare bone Fallout 4.

Mod Organizer 2 is the best organizer out there. The best feature MO2 has is the Virtual File System. The mods you install in MO2 are not in the game folder but in a special MO2 mods folder that gets virtually loaded for the game once you start it. Meaning that you have a non destructive virtual environment to work with. Even if your MO2 becomes a total mess, your game folder stays clean.

BodySlide and Outfit Studio are bundled together and will be the main tools for this guide. Originally made for CBBE, BodySlide will refit every armor to your selected body shape while Outfit Studio helps you create armor for Bethesda games.

FO4Edit is the FO4 release of the xEdit series and will be used to manipulate esps and view information about the outfits we convert.

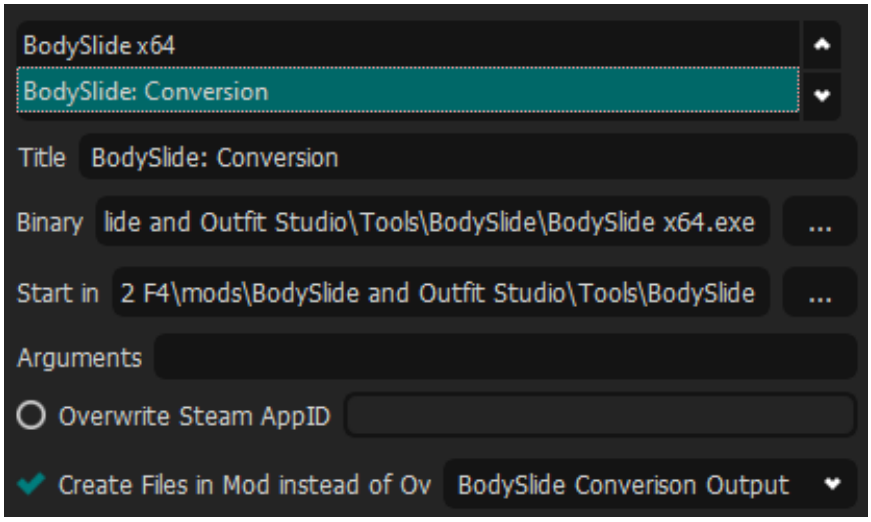
zEdit is a powerful alternative to xEdit and features very small load times making it a good tool for just viewing information *I also helped a bit during development :)*

NifSkope *(optional)* is a tool that lets us view *.nif* files. Nif files contain the mesh and bones of a 3D model.

Blender 2.8 *(optional)* is the best free and open source 3D modeling tool out there. The 2.8 release just went live and we can import and export nif files using the blender nif plugin by the NifTools Project.

2.1 Setting up your environment

A clean and organized environment is important for any kind of work. MO2, which we're all hopefully using, helps us in that regard with the virtual files system and excellent profile management.



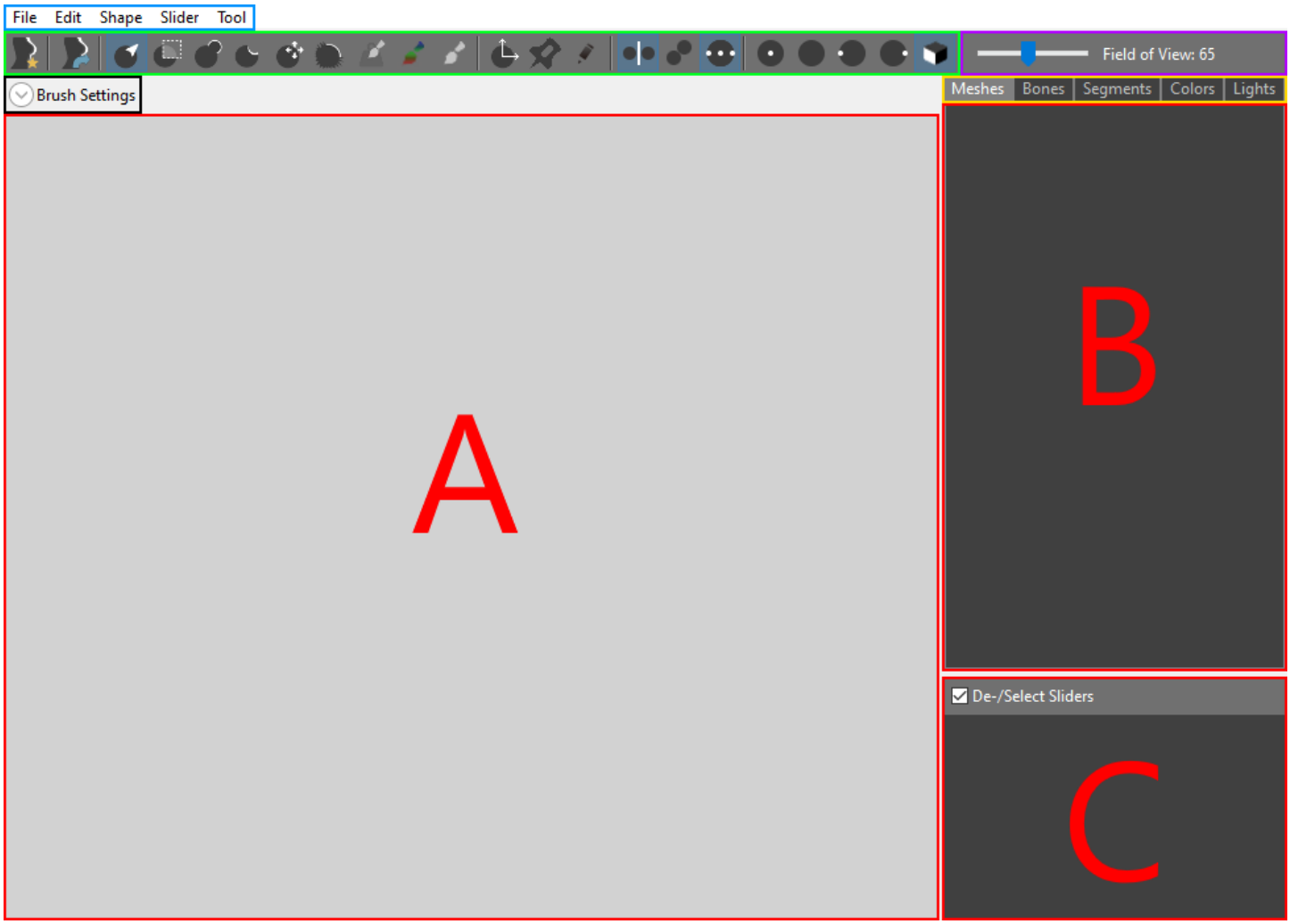
Start by creating a new profile in MO2 that you will use for conversion only. You also want to create a new empty mod that will serve as the output mod for BodySlide.
Use the *Create Files in Mod instead of Overwrite* feature to set the empty mod as the output for BodySlide tho you may have to add BodySlide to the executable list again if you had it from another profile.
You should also create a folder on your local hard drive or on your cloud service of choice where you store all versions of all conversions you did.

Trust me, keeping old conversions can sometimes save you a lot of time. My structure is very simple but effective:

```
+---F4_Conversion_CROSS-Wasteland-Ronin
|   +---1.0
|       \---Tools
|           \---BodySlide
|               +---ShapeData
|               +---SliderGroups
|               \---SliderSets
|   +---Screenshots
+---F4_Conversion_CyberSuit
|   +---1.0
|   |   \---Tools
|   |       \---BodySlide
|   |           +---ShapeData
|   |           +---SliderGroups
|   |           \---SliderSets
|   +---1.1
|   |   \---Tools
|   |       \---BodySlide
|   |           +---ShapeData
|   |           +---SliderGroups
|   |           \---SliderSets
|   +---Screenshots
```

3 | Converting outfits

3.1 Outfit Studio

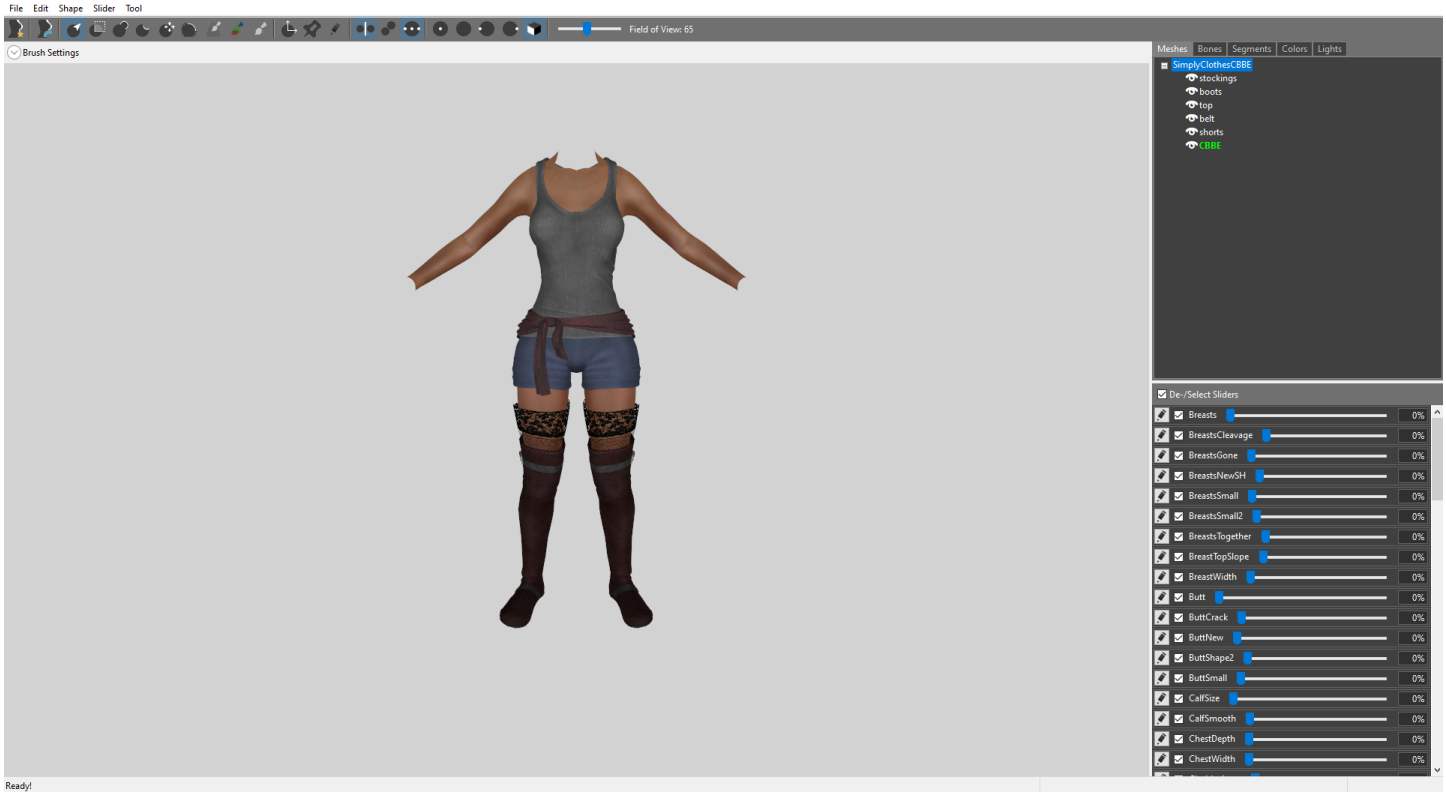


(You might wanna zoom in a bit to see all colors)
This is Outfit Studio when you start it from BodySlide (button in the bottom right corner of BodySlide). This will be our main tool and the area where we will spent the most time in. It is important to get familiar with the tool so you don't waste time trying to figure out where that one menu was. I will go through each of the areas and talk about the most important functions. Most of them are found in other editing software or explain themselves. You also have tooltips for everything that are displayed at the button.
Menu bar (blue): The most important menus are *Shape* and *Slider*. You should make use of all shortcuts in the menus! Shortcuts will reduce the time it takes to do conversions by **a lot**.
Tool bar (green): This little bar has all the tools you will need. Press 0 to 5 on the keyboard to see what tool will get selected. I always get confused that the first tool is on key 0 :p seems like someone took array sizes way too far…
Some tools are usable only when you edit a mesh, others when editing bone weights. This bar also has buttons for changing the views but you should use shortcuts from the *Edit* menu for changing views.
Brush Settings (black): This menu is accessible by pressing space bar and allows you to change the settings of the current selected brush (key 1 to 5). Each brush has their own settings and only the *Size* property stays the same for every brush.
Main Windows (red): A is the renderer view where you see the loaded meshes and will work on them, **B** a container for different properties of each tab and **C** will show all sliders of a reference model.
FOV slider (purple): changes FOV…very useful
Tab list (yellow): We only care about the *Meshes* and *Bones* tabs

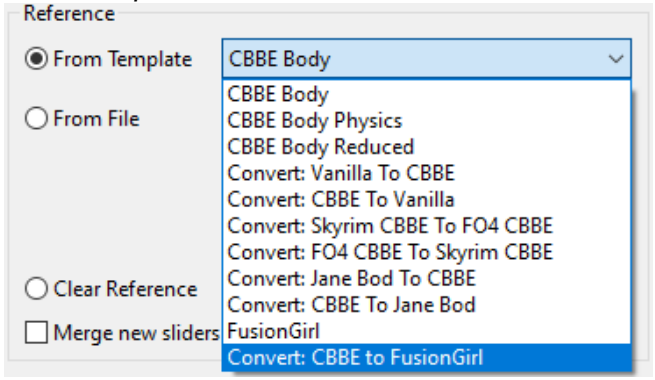
3.2 CBBE To Fusion Girl

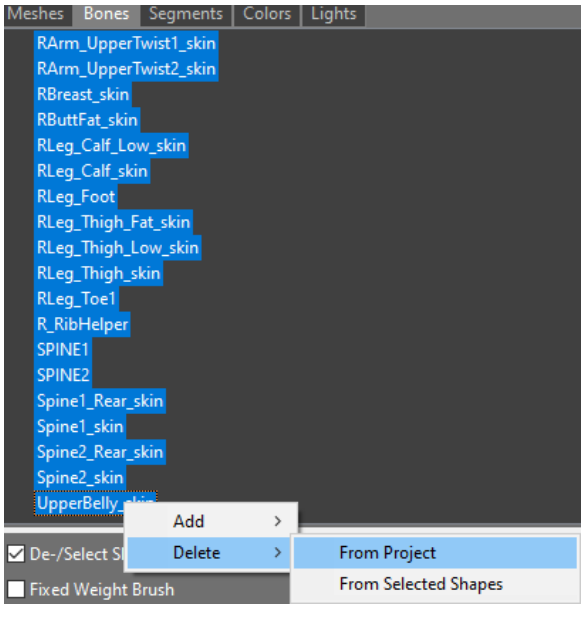
3.2.1 In-Depth Example

Now is finally the time to do some converting!
You will need the CBBE to Fusion Girl BodySlide Conversion Reference if you want to convert from CBBE to Fusion Girl.
Your first conversion should be something easy and simple like Simply Clothes. In this step we will convert Simply Clothes from CBBE to Fusion Girl so be sure to download the mod and start Outfit Studio.
The mod already comes with BodySlide files for CBBE so inside OS we only need to load these.
This is a good time to talk about the structure of OS projects. Inside *data/Tools/BodySlide* are all BodySlide related files. The three important folders for Conversions are *ShapeData*, *SliderGroups* and *SliderSets*. A SliderSet is a project you can load in OS and comes as a *.osp* or *.xml* file. ShapeData is saved as a *.nif* and a *.osd* file and contains the outfit zero-slidered and all information for slider changes. SliderGroups are *.xml* files and assign a project to a group like Fusion Girl. A SliderSet is named a Set because you can have multiple outfits in one Set to keep everything clean.
To load the existing CBBE BodySlide files into OS we load the Project using the Menu (*Files->Load Project*) or the Shortcut (*Ctrl+O*). The file is called *SimplyClothesCBBE.osp*. With the outfit loaded, OS should look like this:

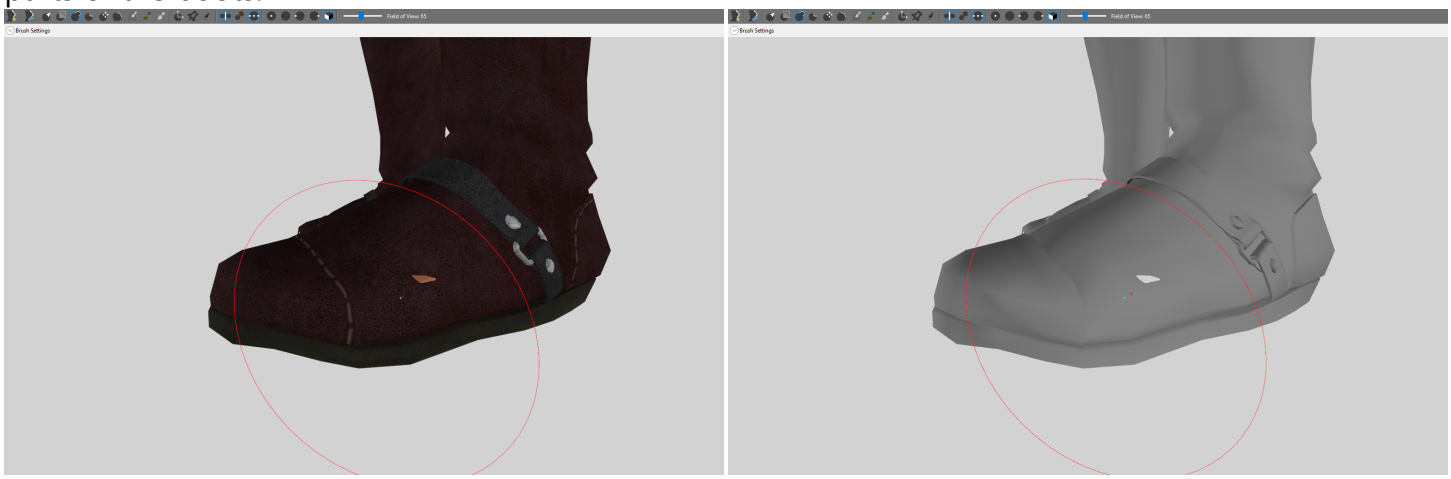


First we have to remove all old bones. Simply click on the *Bones* tab from the tab list, select the first bone, scroll down and use *Shift+Click* on the last bone and *Right Click->Delete->From Project*.
Second load the CBBE to Fusion Girl reference using *File->Load Reference*.

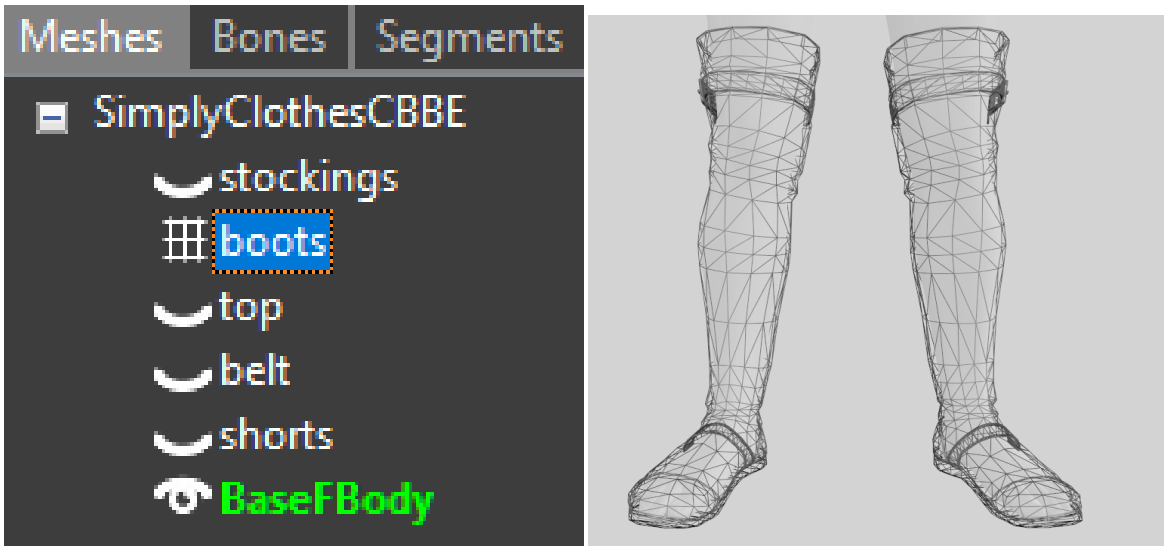




Third conform all shapes (*Ctrl+Shift+C* or *Slider->Conform All*), set the CBBEtoFusionGirl slider to 100 and Set Base Shape (*Slider->Set Base Shape*). You should have noticed that changing the slider from 0 to 100 that the outfit starts to change. This is because we conformed all shapes prior to setting the slider. If you were to not conform all shapes and change the slider you will see that only the body changes.
Fourth load the Fusion Girl reference. Same way as the CBBE to Fusion Girl reference (*File->Load Reference*).
You have now converted a CBBE outfit to a Fusion Girl outfit, good job :). **BUT** we are long from being finished. Only because the reference body for the outfit is now the Fusion Girl body doesn't mean the conversion is '*good*'. This is where the fun begins. Let me introduce you to your arch enemy: clipping. When parts of the body clip through the outfit mesh and appear in places you don't want them to.
A good conversion has the least amount of clipping possible. It is not possible to achieve true 0% clipping but you can get very close so it's not noticeable. We have to use the complete arsenal of OS and possible other tools to reduce clipping.
Fifth reduce clipping for the zero slider base shape. Zero-Slidered is a body preset where all sliders you see in the slider panel are set to 0. This is a base shape and the foundation for everything else. This also means that we have to do a good job on the base shape.
You can navigate the renderer in different ways: **Hold Right Click** to rotate, use the **Scroll wheel** to zoom in and out and **Hold Scroll wheel** or **Shift+Hold Right Click** to move the scene.
The outfit we convert has some clipping in the boots mesh. To fix that we switch to the *Meshes* tab and select the *boots* Mesh. Using the tool with the shortcut 1 we can increase mesh volume on the clipping parts of the boots:

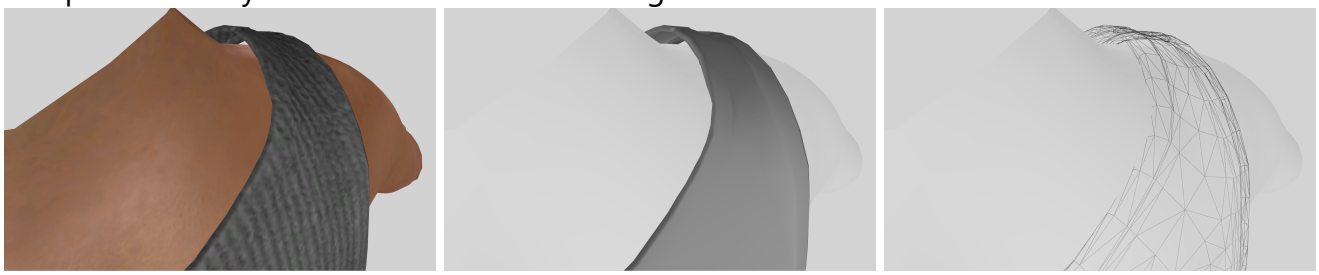


The picture on the right uses the no texture view (*Edit->Enable Textures* or *T*) which is very helpful for finding clipping and working with the mesh in general as you don't really need the texture.
After making sure that you don't see any clipping, we need to start looking at the mesh of each shape individually. In the mesh tab we can make certain meshes visible, invisible and activate their wire frame mode by pressing the icon left of the name. I prefer to start with the boots so make everything except the reference model invisible and activate wire frame mode for the selected mesh.

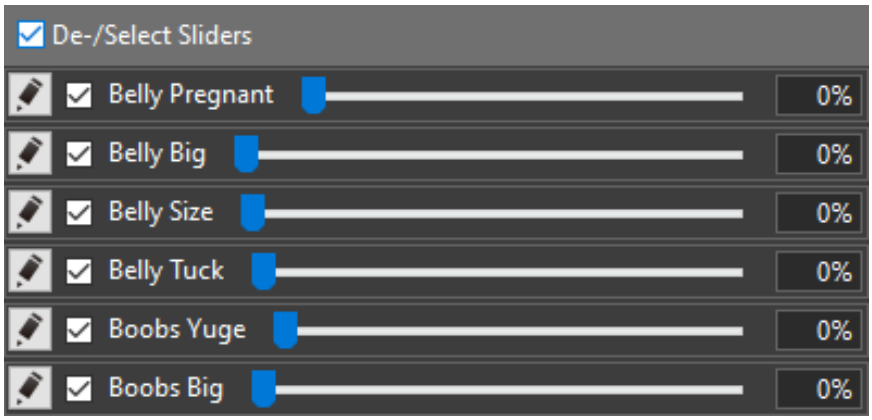


The wire frame mode can also be toggled globally for all meshes (*Edit->Show Wire frame* or *W*) but that would also show the vertices and faces of the reference model.

Wait you don't know what vertices and faces are?
Let me explain: To represent an object in a virtual 3D environment you need a mesh. A mesh is a collection of multiple vertices that form faces together. Vertices are points with coordinates in space. Faces are triangles of connected vertices. Remember hating math in school? Well, this is math :(
Clipping happens when faces of the reference model intersect with the faces of the outfit.
But you may ask yourself: *"If this is all math, why has no one created a computer program that converts outfits by increasing the mesh area on faces that intersect with the reference model by using basic algebra and a good search algorithm?"*
The answer is: *"No one has the time to do stuff like this. Also only a handful of people using OS are knowledgeable enough in Python or C to do this."*
Enough theory and back to practice! In the wire frame mode you want to search for faces that intersect with the reference model. Do note that this **CAN** help in 80% of all conversions if done **CORRECTLY**. Your task will be to check these meshes in wire frame mode (one at a time): *boots*, *stockings*, *short* and *belt*. Continue reading after finishing the task.
All of these meshes do not have clipping or intersecting faces. Let's look at the last one: *top* together. The place where you will find faces intersecting is in the area around the neck and on the shoulders.



As you can hopefully see from the pictures: This sort of clipping is only visible in wire frame mode. Working in wire frame mode is only important for the zero-slidered shape as this is the base for everything else. If we fix this now, we minimize possible clipping due to sliders or physics. After making sure that the top is also completed make all meshes visible and proceed to the next step.
Sixth Conform All again. We conformed the shapes at the beginning when loading the CBBE to Fusion Girl reference model so that the sliders will affect the outfit. We want to conform all again because we have a different reference model and want the sliders of the Fusion Girl body to affect the outfit.
Seventh check **all** sliders for clipping. I've seen a lot of conversions where this step gets ignored or they don't know this exists. What we have done so far is fixing all clipping for the zero-slider preset. If this conversion is private and you use the zero-slider preset in game, than you're kinda done and skip this step. If you want to publish this conversion to the nexus or don't use the zero-slider preset than continue.
This is the part that **will take the longest**. Like I said at the start of this guide: You need **patience** and **time** if you want do create a decent conversion. Lets start by looking at the slider panel:



Each slider has a little pencil icon, a check box, a name and the actual slider. Moving the slider will shape the reference model based on shape data, the check box enables/disables the slider and the clicking the pencil lets us edit the outfit for the slider.
This means that we have to go through each of the slider by clicking the pencil icon and start fixing the clipping. Do note that some sliders are more extreme than others and you can ignore a lot of them through experience. This guide has a list of sliders at the end with notes of my experience and information about what you can ignore. For now, continue with the example.

Let us look at the first slider: *Belly Pregnant*

As you can see it's not a problem of the outfit clipping through the body but parts of the outfit clipping through each other. Always remember that the original mod was not made for Fusion Girl! To fix this simply select the *belt* mesh and increase the mesh volume in that area.

This slider is very extreme and will always give you some clipping to fix. Your task will be to check every slider you think will have clipping.
To reduce the time it takes to convert you don't want to actually check every slider but use the information of the extreme slider of a group. Let me explain:

The *Belly Pregnant* Slider can be considered the extreme slider of the *Belly* group. You just fixed this slider and know that the amount of clipping is very small. The remaining sliders of the *Belly* group are: *Belly Big*, *Belly Size* and *Belly Tuck*. All of those morph the belly area but not so extreme as the *Belly Pregnant* slider, meaning that if you know how the extreme slider morphs and know how each slider works, you will be able to figure out what sliders also have clipping without seeing them.
It takes time and experience to get good at this so for now, try and imagine what belly-sliders will have clipping and check them afterwards. Doing this for every conversion will train your *mental picture* of the outfit using different sliders and helps reduce the time it takes for each outfit by **a lot**.
The belly sliders that have clipping are *Belly Size* (on the belt) and *Belly Tuck* (in the crotch area of the shorts). Do not worry if you didn't got it right the first time as those two have a small amount of clipping.
Next up is the *Boobs* group. The extreme slider is *Boobs Yuge* so try the same again.
The slider with clipping is: *Boobs Yuge*. But we have another problem! The *Boobs Together* slider doesn't introduce clipping but something different.

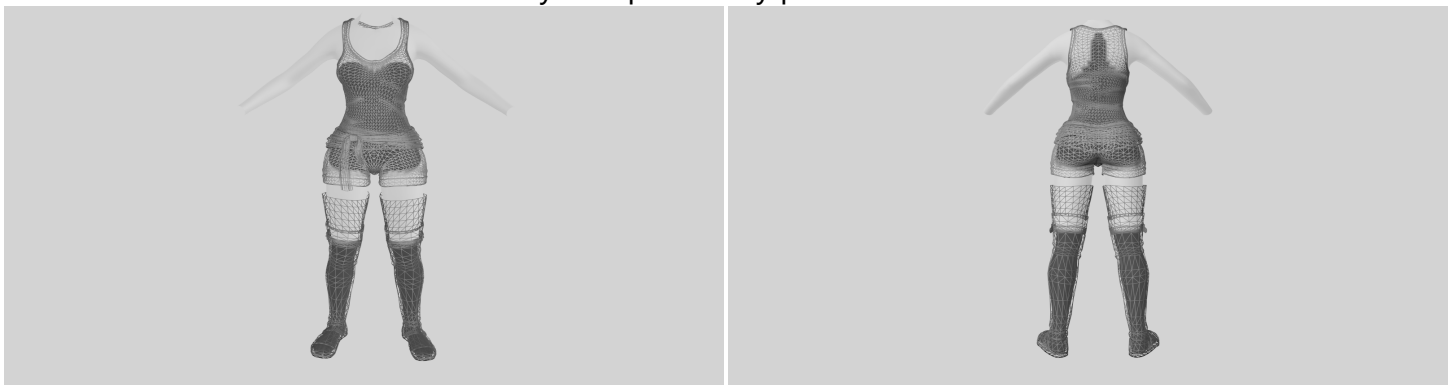
The sliders have affected the mesh in a way that the mesh starts looking weird. This is not intended and needs to be fixed. The smooth tool (*shortcut: 5*) can help us here. Active wire frame mode for the mesh, select the smooth tool and begin smoothing the area. While using the smooth tool you will notice that the mesh starts to change and the vertices start to align. The smooth tool can be very powerful but also very useless at the same time. Sometimes the mesh is so deformed that even the smooth tool won't help.

Your result should look something like this:

Next up is the *Nipples* group, one that I pretty much always ignore. The slider you will have to look out for is the *Nipples Length* slider as this is the extreme slider of the group.
The following 11 sliders from *Chest Depth* to *Hips Upper Width* can be quickly checked by starting with *Chest Width* and *Waist Chubby*. Those two kinda have the most impact of the 11 sliders and can be used

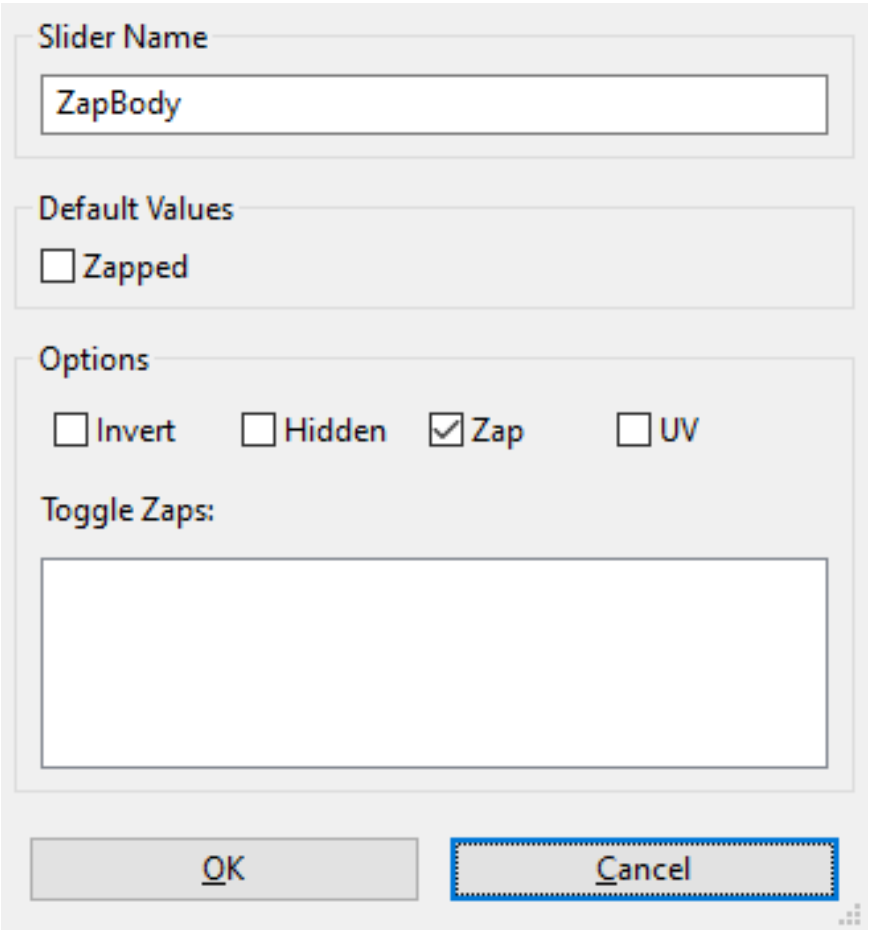
for guidance when thinking about how the other 9 sliders affect the outfit. None of them have clipping.
We now move from the top part of the body to the lower areas and start with the *Bum* group.
This group can get very extreme and you should check **all of them**.
You may have noticed that the upper area has three meshes overlaying each other: *shorts* at the bottom, *top* above that and *belt* on top. Three layers of clothing will make it hard for the body to clip through but can make the layers intersect each other as well. This happens on the *Bum Chubby* slider where the *top* clips through the *belt*.
The other bum sliders are fine individually but not when combined. When dealing with this group I always set the *Bum Apple* slider to 100 and go through each bum slider again.

In combination with *Bum Apple*, the sliders with clipping are: *Bum Round*, *Bum Chubby*, *Bum Crack* and *Bum Size*. You should now also know how to handle the deformation that are visible on the *Bum Crack* slider (tip: smooth tool).
We continue to go lower and arrive at the two *Calf* Sliders which can often be ignored (also in this case). *Legs Chubby* and *Thighs Size* on the other hand are very important sliders. Like before you should do each one individually and than set *Legs Chubby* to 100 and work on *Thighs Size* again. Both combined will often result in clipping. Both sliders, even combined, do not clip in this outfit.
All sliders till *AbDefintion* can be ignored. Most of them don't concern us or don't even do something (like the arms sliders). The last groups of sliders are the *Body* and *Abs* groups. The first one changes the whole body while the other one changes the abs.
You should check *AbDefinition*, *Body Toning*, *XunAbs*, *FFB Fitness 2*, *Athletic* and *SeveNBase Bombshell*. The last one will change the body completely. You may ask why I don't include *TigerSanBB*. The reason is that I don't like it...I've never done that slider and no one has ever complained so I guess no one uses that slider. It takes too much time and will often destroy the outfit's mesh, idea and spirit. If you wanna do it, than dew it or dew it.
That's it. You've made it. All sliders should be fixed and you are ready for the last steps.
Eighth zap sliders. Zap sliders are wonderful. *Zap* is an in game command that deletes the targeted object. A Zap slider does pretty much the same but instead of deleting a whole object, it removes vertices from being build in BodySlide. You zap parts of the reference body that are not visible so that they won't clip through the outfit when physics starts doing it's thing.
To create a zap slider we activate the wire frame mode for all meshes of the outfit and turn on the no textures view. Select the reference model (BaseFBody) and select the mask tool (*shortcut: 1*).
There are **three** ways of creating a zap slider. You **either** mask all parts of the body that you don't want to zap **or** mask all parts of the body that should get zapped and than invert the mask **or** mask all parts of the body that should get zapped and create an inverted zap slider. All roads lead to Rome so try all methods and see what works best for you. I personally prefer the second method.

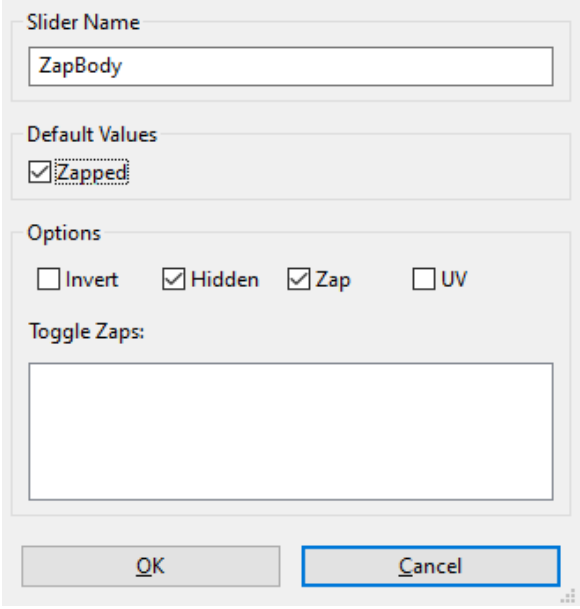


The most important areas you want to zap are the legs+feet and the bum. You will see that I did not masked the thighs because the stockings show the body. If you have textures with transparency than you can't zap that area. Another tip is to not go too ham on the boobs and the upper back area.
Like I said before: I prefer the second method meaning that I have masked the part of the body that should get zapped. I now need to invert the mask using either *Ctrl+I* or *Tool->Invert Mask*. To create a zap slider head over to the *Slider* menu and select *New Zap Slider*. Be sure to give it a good name like

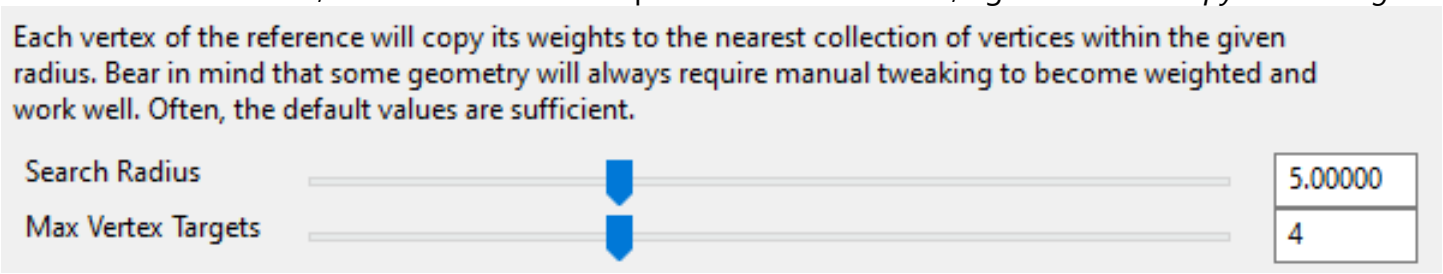
ZapBody. Clear the mask using *Ctrl+A* or *Tool->Clear Mask* and click the pencil icon of the zap slider in the slider list.



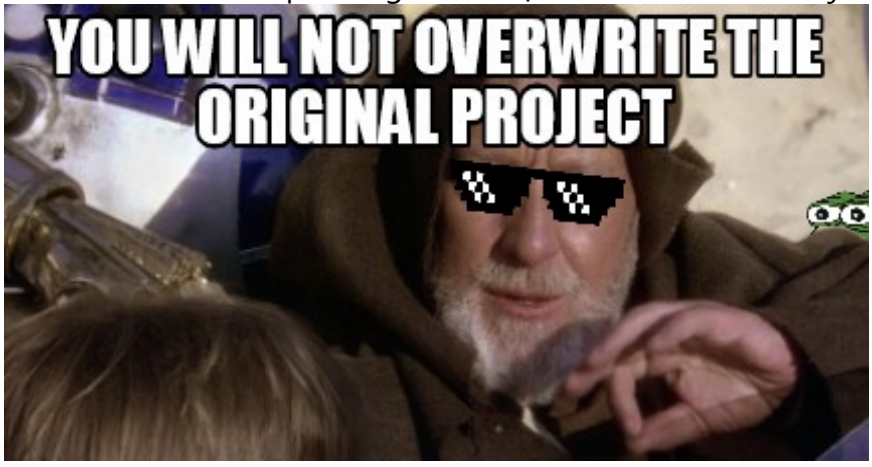
You open this menu by pressing *Tab* or *Slider->Properties*. This is the properties menu for the zap slider. If you went for method 3 and want to create an inverted zap slider tick the box for *Invert*.
Independent of the method you choose, you will need to make sure the user doesn't mess with the slider so tick *Zapped* and *Hidden*.

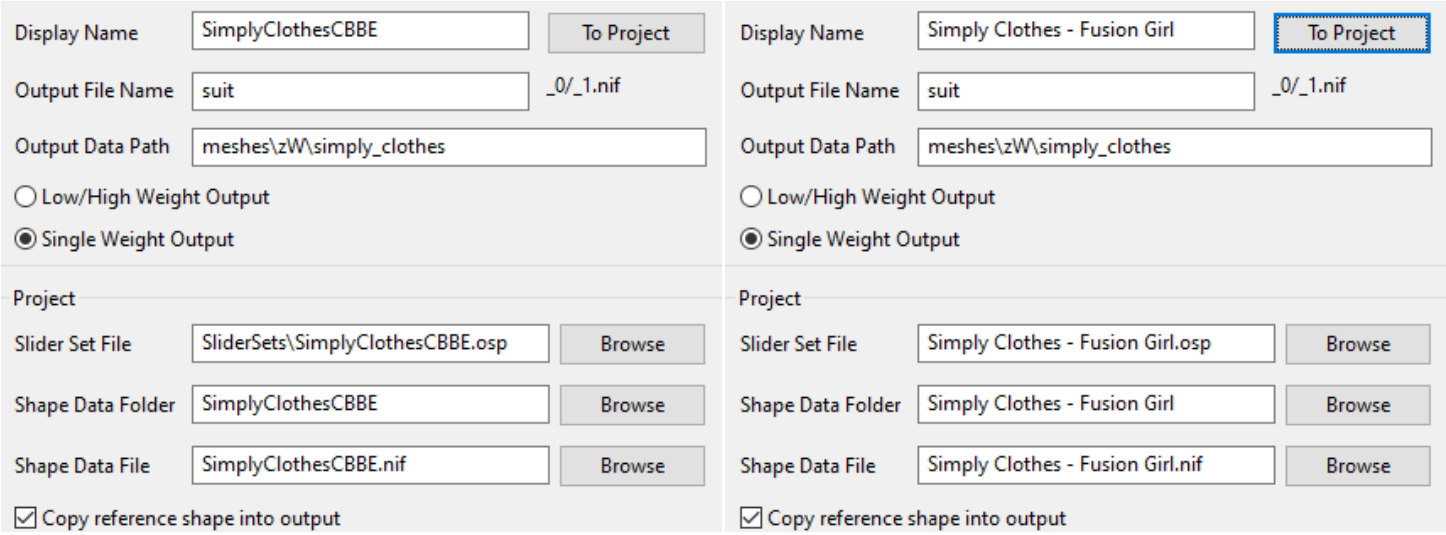


Ninth bone weighting. You may remember deleting all bones from the project at the start in the first step, we are now going to copy the bone weights from the reference model to the current outfit. Proceed to the *Meshes* tab, select all meshes except the reference model, right click and *Copy Bone Weights*.



This little window will pop up and explain to you what the function *Copy Bone Weights* does. If you have no idea what all this text means, don't worry. The important information from that text is that the default values are often sufficient and manual tweaking may be required. Just click **OK** as the default values are good for this outfit.
Tenth save the project as a new one. **DO NOT overwrite to original CBBE BodySlide files!** What you want to do is either pressing *Ctrl+Shift+S* or *File->Save Project As*.





This little window will open letting you change different properties before saving.
The *Display Name* should be changed to reflect the conversion to the Fusion Girl body. I like to write the name of the outfit followed by a "- Fusion Girl" so that it will be "Simply Clothes - Fusion Girl".
After setting the Display Name, click the *To Project* button and you will see that all text fields in the project field group are now the same as the display name.
The original mod has only one outfit so you can now click *Save*. The other different properties and their uses are explained in another section of this guide that you can read **after** finishing this project.
Eleventh#1 previewing the outfit. You can now exit Outfit Studio and BodySlide. You have to reopen BodySlide because new projects only get loaded on the start of BodySlide. Inside BodySlide select the created project from the list at the top, the name of the project is the display name you assigned the last step.
Click the preview button and look if the outfit has any clipping with your selected preset (use a preset for the Fusion Girl body not for CBBE). Also check if you see missing parts of the body. This is the result of bad masking for the zap slider and will be fixed in step twelve.
Eleventh#2: Creating a SliderGroup file. A SliderGroup file can either be created manually or with BodySlide. I recommend BodySlide so you don't make any mistakes manually. In BS open the *Group Manager* menu from the button in the top right corner and click *Save As*. Give the file a good name, I never have spaces in this file name and will call this one *SimplyClothes-FusionGirl*. Doing so will create a new empty SliderGroup file that we can open by clicking the *Browse* button and selecting the new file. You **should always** add the *Fusion Girl* group by typing the name of the Group in the textbox left of the *Add Group* button and than clicking that button.

You can now select the group from the *Groups* list and will notice that the elements of the panel in the right are now clickable. The *Outfits* panel has a list of all projects loaded in BS. Simply select the Conversion you just created and click *« Add*. Click *Save* and you successfully have added the conversion to the Fusion Girl group. You can now exit the Group Manager. BS will not have the new group loaded until the next restart but you can reload all groups manually by clicking the lens left of the *Group Filer* textfield in the top right corner. Click *Refresh Groups* and select the Fusion Girl group next, there you will see that the conversion was added.
Twelfth fixing the outfit (**OPTIONAL**, *skip if you don't have clipping or bad masking*).
To re-open the project simply click the second icon right of the *Outfit/Body* Drop down menu or load the project in OS using *Ctrl+O* or *File->Load Project*.
Fixing bad zap masking:
Select the reference model and than the zap slider by clicking the pencil tool and use the *Slider->Mask Affected Vertices* function. Next step is to delete the old zap slider using *Slider->Delete Slider*. You still have the mask so **either** invert the mask and fix the bad masking **or** fix the bad masking and than invert. Either way after fixing recreate the zap slider with the *Zapped* and *Hidden* properties checked.
Fixing clipping:
This can be a bit time consuming if you don't know where to look. You can load the preset into OS *Slider->Load Preset*. You can only edit the shape if either all sliders are set to 0 or one slider is selected

using the pencil. You will need figure out what slider is causing the clipping. Just look at the area of the clipping and find the corresponding slider group. Move the extreme slider from 0 to 100 and check if this changes something. Once you narrowed it down to one or two sliders, simply click the pencil and edit the mesh. You do not have to copy the bone weights again so just save the project *Ctrl+S/File->Save Project*.

Thirteenth testing the outfit in game. Before you go and jump in game make sure you build the correct outfit in BodySlide. If that is done go ahead and start FO4, load a testing save game (or create a new one) and add the outfit to your inventory.

Use *help Simply 0 ARMO* to get a list of all items with the signature *ARMO* that contain the name *Simply* and use *player.additem* to add the outfit.

I advise to start going through the animations in order: standing, walking, running, jumping. See if there is any clipping on the bum or the knees. Those are the areas you need to check in game. You should not find anything if following the steps correctly.

Fourteenth taking screenshots. You can do this while testing the outfit in game. I'm no screenarcher and the evolution of my screenshots are reflected in the mod images of mine. Here is a very useful guide you might wanna check if you intend to do 'good' screenshots. You can also ask someone nice to help you like the nice people in our discord. I can't really write anything else here…just do some screenshots.

Fifteenth finishing up. You should be done now. You replaced the CBBE body with the FG one, you fixed all clipping for zero- slidered and different slidered, you tested the outfit, you adjusted stuff and you took screenshots. What's left is depending on your needs. I did a Simply Clothes Fusion Girl BodySlide Conversion as my first conversion and published it to the nexus. This *little* tutorial on converting this specific outfit is now done. You can be proud if everything worked and you have no problems.

What's next?

Convert more outfits. This time choose one that wasn't converted already and **keep the difficulty low**.

This guide is far from finished. You can continue reading but if you wanna stop here: I hope you learned something new today. Congratulations

3.2.2 General procedure

I expect you to have completed the in-depth example **before** continuing with this guide. If you encounter any problems, go look at the example again or ask for help on discord. If it's something specific to this guide go the discord I'm most active on and if it's something conversion related try either my main discord or the offical ZeX Discord. Starting at section 4 you will find tips for anything so be sure to also check those.
Zero check what slot the outfit uses (see biped slots section) **First** (after loading the project) delete all bones **except** any custom cloth bones that you often find on a dress or special equipment (see Dress/Skirt section if you have one of those).
Second load the CBBE to Fusion Girl reference model
Third conform all shapes that you want to be affected by the slider (see Swimsuit/Bikini/Underwear and High Heels section if you have one of those), set the CBBEtoFusionGirl slider to 100 and Set Base Shape
Fourth load the Fusion Girl reference body (or the ZeX-FusionGirl-HighHeels body if you do HH)
Fifth fix clipping for the zero-slider preset
Sixth conform all shapes that should be affected by the sliders (again depends on the type of outfit)
Seventh fix clipping for all sliders
Eighth create zap sliders if the outfit is in slot 33 (see Biped Slots section for more information)
Ninth copy bone weights
Tenth save the project as a new one and tick *Copy reference shape into output* if the outfit is in slot 33
Eleventh preview the outfit in BodySlide, check for clipping and create a SliderGroup file
Twelfth fix any remaining clipping
Thirteenth test the outfit in game and take some screenshots while you're doing that
Fourteenth finish up, copy the files you created to your created mods deposit, zip them and upload to the Nexus

3.3 Mesh To BodySlide

3.3.1 Outfit

I honestly always avoid creating BodySlide files from a mesh and it's rather rare to not find at least CBBE BodySlide files for an outfit released in the last 1-2 years. If you, for some unknown reason in this world, have to convert the mesh of an outfit to Fusion Girl BodySlide files, than come prepared and experienced. Don't try this if you've only done like five conversions so far. My first apprentice actually tried to do this as their first conversion which made me create this section as a warning.
If you want to convert an outfit to the Fusion Girl body that was made for CBBE but doesn't come with BodySlide files than you have to use the provided mesh directly. This process is often very messy and the result can be very bad if you don't have enough experience in this.

Method 1:

Load the outfit into OS using *File->Load Outfit* and give the project a good Display Name like "*NameOfOutfit - Fusion Girl*". You have to browse for the nif file and can keep the textures settings to *Automatically search for textures*.
Once the outfit go to the bones tab and delete all old bones. In the mesh tab you will notice no reference model but depending on the type of outfit you may find a body mesh that isn't a reference model. This mesh should be called *CBBE* or *CBBE Body* or something similar. If you have this kind of mesh than select it and *Right Click->Set Reference*. The name of the mesh should now be green. Next up is your typical process of loading the *CBBEToFusionGirl* reference model, conforming all meshes, setting the slider to 100, set base shape and loading the Fusion Girl reference model.
Now is the part that gets complicated:
The mesh you loaded may have not been made for the zero slidered CBBE preset. You will most likely have not only clipping but also gaps between the outfit and the body. You will have to increase the mesh on the parts that clip, like you would normally do, but also decrease the mesh to make it fit the zero slider base shape of the Fusion Girl body.
You have to work extremely smooth and clean or the mesh will take on a weird shape. This process requires a lot of precision and the use of all tools OS has to offer.

Method 2:

Another method would be to make the outfit fit the CBBE zero slider preset and than convert to Fusion Girl. So you would convert the CBBE Mesh to CBBE BodySlide and than to Fusion Girl BodySlide. I don't like this method as it requires you to switch between FG and CBBE and take an extra step but it will result in a somewhat cleaner conversion.

3.3.2 Gloves

Creating BodySlide files for gloves is on the easier side of things but still often ignored. Most CBBE BodySlide projects do not include the gloves but they are important to convert due to the different skeleton and bones CBBE and FG uses.
First load the outfit. To load the outfit go to *File->Load Outfit* and navigate to the nif file. It is important to select the nif file inside the Fallout 4 data folder and not in the MO2 folder. You should also change the Display Name to something meaningful like *NameOfGloves - Fusion Girl*.
Second delete old bones. Head over to the *Bones* tab and delete all bones from Project *Right Click->Delete->From Project*.
Third load the hands reference model. The hands model is separate from the body so go to *File->Import->From Nif* and load *data/meshes/actors/character/characterassets/FemaleHands.nif*.
Fourth fix clipping. Select the gloves mesh and fix clipping (I advise to disable x-mirror *Edit->X Mirror*).
Fifth copy bone weights. Select the *NewFHands* mesh and *Right Click->Set Reference*. The name of the mesh should now be in green and you can select the gloves mesh and *Right Click->Copy Bone Weights*.
Sixth (optional) if the gloves go beyond the hands and also cover the forearm than you need to follow this step, if they just cover the hands than proceed to step seven.
You have to select the *NewFHands* mesh and *Right Click->Set Reference*. This will make the text of the mesh white. You need to do this because we now load the Fusion Girl reference body which would override other reference models as only one reference mesh can exist. So just go to *File->Load Reference* and select *Fusion Girl*. Select the gloves again and *Right Click->Copy Bone Weights*. Delete the Fusion Girl body *BaseFBody, Right-Click->Delete* and make *NewFHands* the reference model again using *Right Click->Set Reference*.
Seventh save the project. Using *Ctrl+Shift+S* save the project and **copy the reference shape into output**.

3.4 SliderGroups

I want to talk a bit more about SliderGroups as I've often seen conversion making no or bad use of them. SliderGroups are xml files and assign ShapeData to a group. Lets look at an example:

```
<?xml version="1.0" encoding="UTF-8"?>
<SliderGroups>
    <Group name="Fusion Girl">
        <Member name="SimplyClothesFusionGirl"/>
    </Group>
</SliderGroups>
```

As you can see, the Member *SimplyClothesFusionGirl* gets assigned to the group *Fusion Girl*. When you select *SimplyClothesFusionGirl* in BodySlide you will also see that you can only select presets that are made for the group *Fusion Girl*. It is important to create a SliderGroup file for your conversion so that the user doesn't try and build the outfit with a CBBE preset.
Another important feature is adding new groups if you have multiple outfits.

```
<Group name="Fusion Girl">
    <Member name="Shino_Bikini_01_Bot - Fusion Girl"/>
    <Member name="Shino_Bikini_01_top - Fusion Girl"/>
    <Member name="Shino_Bikini_02 _Bot - Fusion Girl"/>
    <Member name="Shino_Bikini_02 _Top - Fusion Girl"/>
    <Member name="Shino_Bikini_03_Bot - Fusion Girl"/>
    <Member name="Shino_Bikini_03_Top - Fusion Girl"/>
    <!--...-->
    <Member name="Shino_thong_1 - Fusion Girl"/>
    <Member name="Shino_thong_2 - Fusion Girl"/>
    <Member name="Shino_Top_01 - Fusion Girl"/>
    <Member name="Shino_T-shirt_01 - Fusion Girl"/>
    <Member name="Shino_T-Shirt_02 - Fusion Girl"/>
    <Member name="Shino_T-Shirt_03 - Fusion Girl"/>
</Group>
<Group name="ShinoClothes - Fusion Girl">
    <Member name="Shino_Bikini_01_Bot - Fusion Girl"/>
    <Member name="Shino_Bikini_01_top - Fusion Girl"/>
    <Member name="Shino_Bikini_02 _Bot - Fusion Girl"/>
    <Member name="Shino_Bikini_02 _Top - Fusion Girl"/>
    <Member name="Shino_Bikini_03_Bot - Fusion Girl"/>
    <Member name="Shino_Bikini_03_Top - Fusion Girl"/>
    <!--...-->
    <Member name="Shino_thong_1 - Fusion Girl"/>
    <Member name="Shino_thong_2 - Fusion Girl"/>
    <Member name="Shino_Top_01 - Fusion Girl"/>
    <Member name="Shino_T-shirt_01 - Fusion Girl"/>
    <Member name="Shino_T-Shirt_02 - Fusion Girl"/>
    <Member name="Shino_T-Shirt_03 - Fusion Girl"/>
</Group>
```

In this example I had to convert 47 outfits and created a new group for them so the user can just select the group and batch build them all.
SliderGroups are good for organizing your conversions and can be easily created inside BodySlide using the Group Manager. Step **Eleventh#2** in section **3.2.1** goes into detail on how to use the Group Manager but it is honestly very self explanatory so you shouldn't have too much problems with it.

4 General Tips and Tricks

- Always check what slot the outfit uses before converting
- Only create a new group for the conversion when it has at least 6-8 pieces
- The shape menu has *Move*, *Rotate* and *Scale* functions if you don't like the move tool on 4
- You can also transform a shape using the select tool (0), activating the pivot point and showing the transform tools (10th tool in the tool bar)
- If you don't like increasing the mesh from the outside, you can move the camera inside and decrease the mesh area from there to push it outside. Very useful if you have multiple layers of clothing in one shape
- If you have problems with bone weighting make sure you did not delete any cloth bones at the beginning
- Collars around the neck are often higher and require a bigger search radius for bone weighting but I recommend lowering the collar by masking everything around it, increasing the size of the decrease mesh tool (3) and decreasing the mesh of the collar
- If the original BodySlide files had any Zapsliders than you need to recreate those too
- There is always a bigger fish that can help you if you're stuck. We have a discord with nice people that can help you or you can try the offical ZeX Discord and ask there.
- If the original CBBE BodySlide files had finger bones, than you will have difficulties copying the bone weights as you need to import the hands model (look at the gloves section).
- You should create a template for mod descriptions to make life easier and your mods consistant looking (mine can be found on the mod page)
- When you fix a problem in your already uploaded mod, create an update with the fix so people don't have to download the whole thing again
- People die if they are killed
- There is no one true way of doing conversions, if you find a way that works for you and produces good conversion, use it
- Converting from Skyrim CBBE (non HDT) to Fallout 4 FG is more complex and you have to do an extra step: TESV CBBE->FO4 CBBE->FO4 FG because there is currently no Skyrim CBBE to Fallout 4 Fusion Girl conversion reference. Here is a guide that might help you.

5 | Tips for different outfit types

5.1 Biped Slots

Biped Slots determine what body parts the outfit covers. This element is part of an ARMA record which is referenced by an ARMO record. Sounds confusing? Let me explain:
Adding an outfit into FO4 requires an esp. Using the creationkit or xEdit/zEdit you can create an esp and add an ARMO record to it. This ARMO record contains all information about an outfit. ARMO stands for Armor and ARMA stands for ArmorAddon. The ARMO record also contains the Editor ID of the ARMA record. You have one ARMA record for every ARMO record, no more, no less. The ARMA record contains information about what nif file to use and what Biped Slot the armor/outfit uses.
"This is all nice and good, but what has this to do with converting outfits?". you may ask. Well it is important to understand what type of Biped Slot the outfit you are converting has. The most important, is slot **33 - BODY**.
Remember when saving a project that you have the option to copy the reference model into the output file? If the outfit is in slot 33 than you **must** copy the reference model. If you don't have a BODY in the slot for the BODY than you won't see the body. Simple, right? You can try and not copy the ref model for a slot 33 outfit and see what happens.
This also means that you **should not** copy the ref model for everything else. For example: If you have an outfit in slot 41 - [A] Torso than you don't want to copy the ref model because doing so will make the output file 3x larger and can introduce clipping.
On the topic of clipping: **You can't zap a non existing ref model. Only use zap sliders in a project if the outfit is in slot 33.**
Lets have a look inside an esp using zEdit (using *SimplyClothes* as an example):

Armor Addon		
42000802	zWGirl_ARMA_SimplyBoots	
42000803	zWGirl_ARMA_SimplyShorts	
42000804	zWGirl_ARMA_SimplyBelt	
4200080B	zWGirl_ARMA_SimplySuit	
42087801	zWGirl_ARMA_SimplyTop	
Armor		
4200080A	zWGirl_ARMO_SimplySuit	Simply Cloth Suit

You can see that you have one ARMO record and five ARMA records.

⊟ Models	
⊟ Model [0]	
INDX - Addon Index	0
MODL - Armor Addon	zWGirl_ARMA_SimplySuit [ARMA:4200080B]

Inside the ARMO record we can find out what ARMA record it uses.

BOD2 - Biped Body Template	
First Person Flags	33 - BODY

The ARMA record shows that the outfit uses slot 33.

⊟ BOD2 - Biped Body Template	
First Person Flags	33 - BODY, 36 - [U] Torso, 37 - [U] L Arm, 38 - [U] R Arm, 39 - [U] L Leg, 40 - [U] R Leg

You can also get the slots in the ARMO record but I prefer to look at the ARMA record so that I also know what nif file it uses. (*Note that in this case the SimplySuit shows more slots than the ARMA record because it is made up of multiple parts like Boots,Shorts,...*)

5.2 Gloves

Gloves are in a seperate mesh:
Creating BodySlide files for gloves is on the easier side of things but still often ignored. Most CBBE BodySlide projects do not include the gloves but they are important to convert due to the different skeleton and bones CBBE and FG uses.
First load the outfit. To load the outfit go to *File->Load Outfit* and navigate to the nif file. It is important to select the nif file inside the Fallout 4 data folder and not in the MO2 folder. You should also change the Display Name to something meaningful like *NameOfGloves - Fusion Girl*.
Second delete old bones. Head over to the *Bones* tab and delete all bones from Project *Right Click->Delete->From Project*.
Third load the hands reference model. The hands model is separate from the body so go to *File->Import->From Nif* and load *data/meshes/actors/character/characterassets/FemaleHands.nif*.
Fourth fix clipping. Select the gloves mesh and fix clipping (I advise to disable x-mirror *Edit->X Mirror*).
Fifth copy bone weights. Select the *NewFHands* mesh and *Right Click->Set Reference*. The name of the mesh should now be in green and you can select the gloves mesh and *Right Click->Copy Bone Weights*.
Sixth (optional) if the gloves go beyond the hands and also cover the forearm than you need to follow this step, if they just cover the hands than proceed to step seven.
You have to select the *NewFHands* mesh and *Right Click->Set Reference*. This will make the text of the mesh white. You need to do this because we now load the Fusion Girl reference body which would override other reference models as only one reference mesh can exist. So just go to *File->Load Reference* and select *Fusion Girl*. Select the gloves again and *Right Click->Copy Bone Weights*. Delete the Fusion Girl body *BaseFBody, Right-Click->Delete* and make *NewFHands* the reference model again using *Right Click->Set Reference*.
Seventh save the project. Using *Ctrl+Shift+S* save the project and **copy the reference shape into output**.
Gloves are not in a seperate mesh:
If you have Bodysuit, for example this one, and the gloves are in the same project as the complete outfit than you do everything the normal way until you need to copy the bone weights.
You may have noticed at the start that you deleted finger bones from the CBBE project. You will now have to import the new FemaleHands mesh that has the new finger bones. **First** Head over to *File->Import->From Nif* and load *data/Meshes/actors/character/Characterassets/FemaleHands.nif*.
Second You will now have to fix clipping for the gloves but only for the base shape as the hands do not have any sliders.
Third make the hands the reference model *Select NewFHands->Right Click->Set Reference*.
Fourth Copy bone weights. The default settings are enough now that you have finger bones.
Fifth Delete *NewFHands* and make *BaseFBody* the reference model again.

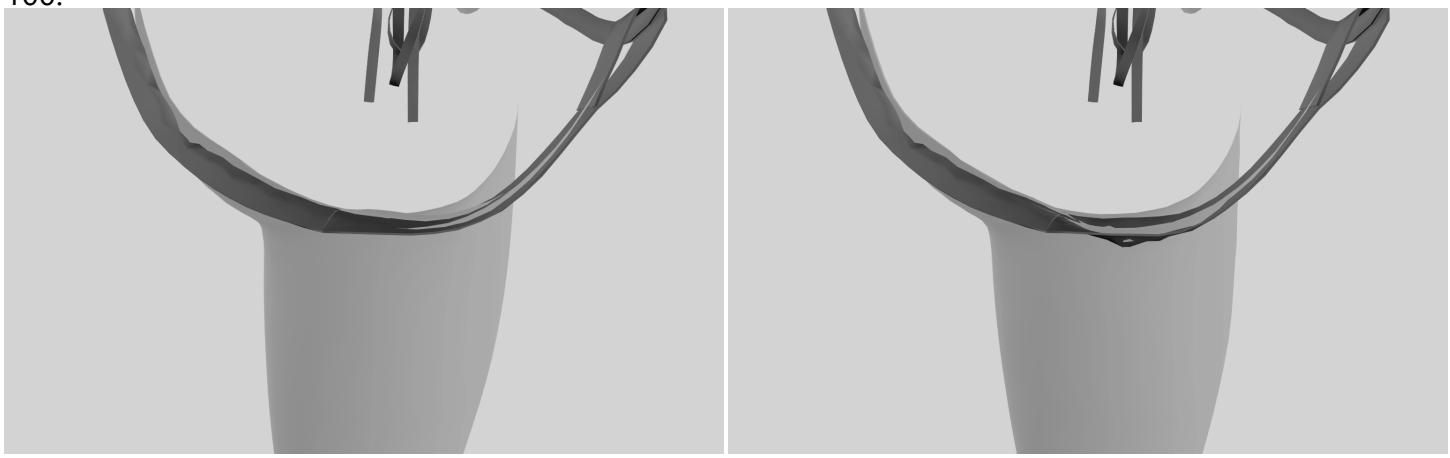
5.3 Bodysuit

The type of Bodysuit I'm talking about is the skin tight one. Like GRIM Zero Suit Samus/Conversion, Cybersuit/Conversion, ALSL Vault Suit/Conversion, Vtaw Jumpsuit/Conversion or the Bodysuits from Fortaleza Armor/Conversion.
I of course converted all of them and noticed a similar pattern which led to the creation of this category. You can watch me convert the GRIM Zero Suit Samus here but do note that the video is 32 minutes long and has no commentary or explanation on what is going on, I also can't put this on YouTube due to the content policy towards 3D meshes and educational videos. (get VLC if you can't play the video using the Windows Media player or Windows 10's new Films & Tv)
Anyway, Bodysuits are skin tight and when done correct will even show the outline of abs or muscles on the body. This means that you have to work precise and create a very good zero-slider foundation. When loading the Bodysuit and loading the reference model you will most likely see a lot of clipping everywhere (check the video).
I advise to increase the mesh around the breasts and the hips a bit more than usually so that it won't clip. Do this now for the base shape so you don't have to do this for every breasts or hip/waist slider.
Bodysuits are almost always in slot 33 which means that you should create zap sliders. You can cheese this part a bit:
When I was converting the Fortaleza Armor set, I had to do a very special full body suit called *BodySynth*. Here (NSFW) is a picture of that suit. Because it covers the whole body, I just did everything the normal way until I had to fix clipping. Instead of fixing everything for all sliders I just created a zap slider for the whole body (no mask). This meant that it took two minutes to convert the outfit and you had zero clipping. You should check the BodySlide files for yourself, the outfit is in the main file here.
This was a very special case but what you can learn from it, is the fact that you can often cheese the hell out of bodysuits which makes them a very good target for quick conversions and learning opportunities. If your bodysuit does not cover the whole body like this one (SFW) or this (SFW) than you can still zap a lot of the upper body but have to be **very careful** in the bum area.
The mask around the bum for the zap slider has to be extreme precise and you may have to redo it multiple times to get it right. It is better to mask a bit more the first time to see where the limit is and than close in on the perfect mask. You don't have to go in-game every time but can just use NifSkope or the preview function in BodySlide to check if you zapped more than you should.




5.4 Swimsuit/Bikini/Underwear

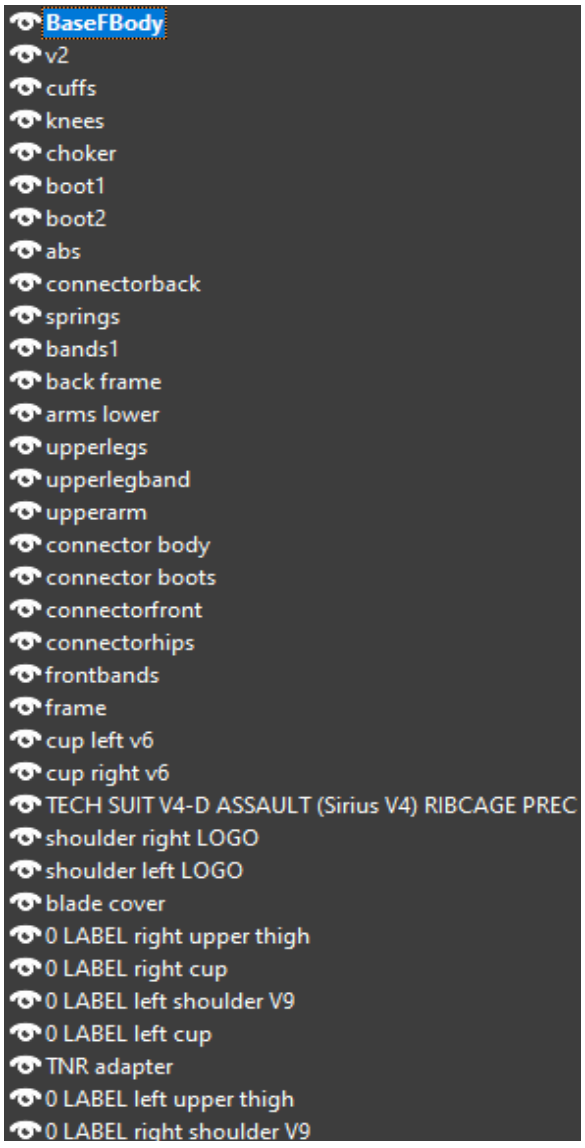
Swimsuits, bikinis, sexy underwear, tight g-strings this is the category for skimpy outfits. These outfits show a lot of skin which makes zapping parts of the body very hard. You think that less clothing will make for a quicker conversion but that is not the case.
Lets start with Bikinis and Swimsuits. I will use Shino Bikini Pack/Conversion and Diamond Luxury Swimsuit/Conversion as examples. *(Wikipedia links for those who don't have the discovery channel)*
Bikinis often have a kind of Thong with a very thin strip of material on the backside. This thin strip is the biggest problem when converting. Remember that you conform all shapes at the start after loading the *CBBEToFusionGirl* reference model? This is where the problems start:
When the material is this thin, it starts to morph in a way you don't want it to when setting the slider to 100.



The left image has the slider *CBBEToFusionGirl* on 0 and the right image on 100 when conforming all shapes.
You don't want that. What you should do is load the project, delete old bones, load the reference model and look at how the thin strip of material morphs when conformed to the *CBBEToFusionGirl* slider. If it morphs just fine without problems (probably won't :O) than proceed normally **but** if it morphs like in the pictures, destroying the original mesh structure completely, unload the project (*Ctrl+W* or *File->Unload Project*). Load the CBBE project again, delete old bones, load the reference model but this time select the bikini mesh, mask the area below the labia shouldn't morph, conform all, set slider to 100 and set base shape. After loading the Fusion Girl reference model you will probably have some minor clipping at the masked area, just clear the mask (*Ctrl+A* or *Tool->Clear Mask*), and increase the mesh.
Your problems are not over yet. When you proceed to the bum sliders you will start to face the next wall:
You will have to make a decision on how you will change the mesh for a huge ass. The thin strip of material will disappear using the *Bum Apple*, *Bum Crack* and *Bum Chubby* sliders so you can either let it disappear or increase the mesh to make it reappear. It comes down to personal preference and how the mesh is structured in general. You can also just try increasing the mesh to see if it looks good and if not just undo it.
Swimsuits on the other hand have it a bit easier as you can sometimes zap parts of the body. Something like this from ShinoClothes has good options for zapping the body.

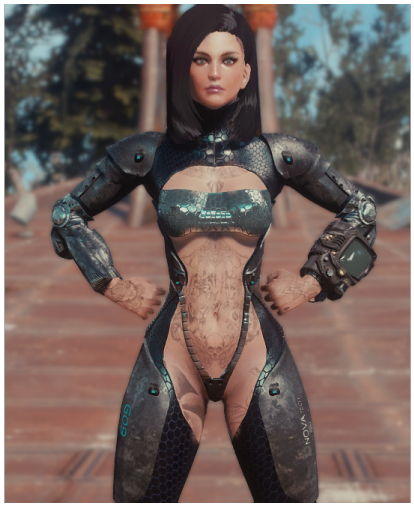
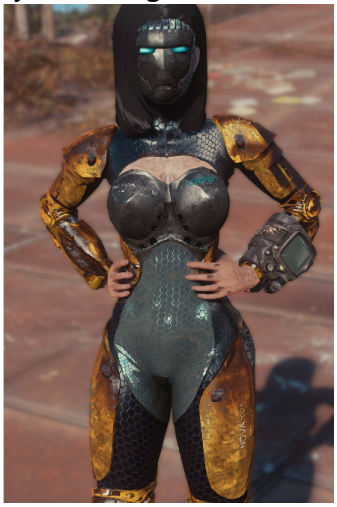
5.5 Armor

You have two kinds of armor types on the Nexus: Skimpy with protection and lore-friendly full cover armor. Let's start with the full cover armor:
This kind of armor can come in two variations: **Either** a complete armor set in slot 33 like the *HN66s SIRIUS.12 Assault Suit* linked above **or** modular with multiple armor pieces in different slots like *HN66s SIRIUS.16 Assault Armor*.
The beauty in this is that you can cheese a lot again, similar to what I said in the Bodysuit section. The full cover complete armor set is the easier on and you will have less problems with the body clipping through the armor but each armor piece clipping through each other.



Just take a look at the amount of meshes in the HN66s SIRIUS.12 Assault Suit.
Those are **34** meshes btw. Most of them are not so important like logos or stickers on the suit but in this case you have a Bodysuit covering the whole body and than for each body part armor pieces that are all connected.
Sure you can easily zap the whole body but you still have to worry about each armor piece.
The good thing about all of this is the fact that you have to do the most work on the base shape. You don't have that much to fix on different sliders as you zap the body anyway and all that armor gets morphed nicely based on the zero slidered base shape.
The skimpy but protective armor is often modular like the Fortaleza Armor Set I linked above. The Fortaleza Armor for example had some bodysuits in slot 33 and the rest were all individual armor pieces for L-Arm, R-Arm, L-Leg, R-Leg and Torso. You can't copy the reference model for those individual armor pieces meaning that you also can not zap the body. Good for me was the fact that each piece had a huge amount of vertices and a very thick structure that went into the skin to reduce clipping.
What you should always check when dealing with individual armor pieces is combining them and seeing how the work together. If you have one bodysuit and parts for each slot (L-Arm, R-Arm, L-Leg, R-Leg and Torso) in individual projects, you can load the bodysuit and add the pieces using *Ctrl+Shift+O* to the project. Only do this **after** you saved the bodysuit and **do not** save the project with all the pieces in it. This is intended to check how they work together.



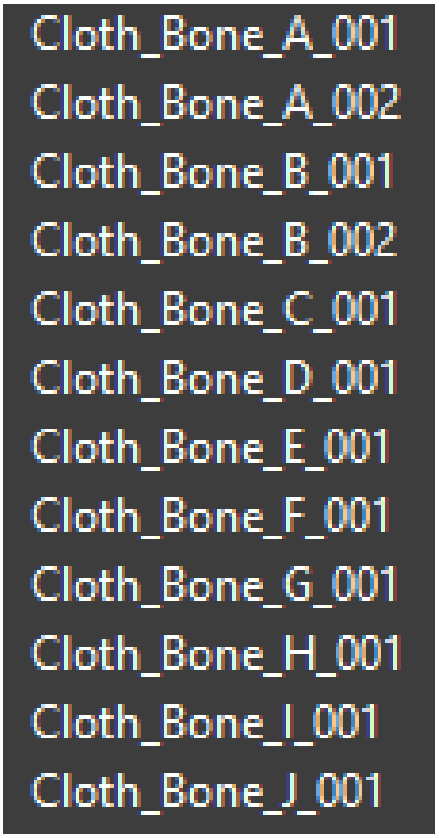



5.6 Dress/Skirt

It's not always about huge *assets*. kozakowy demonstrates this perfectly. This section covers the little tricks for converting a dress or a skirt.

If you have the original mod and the CBBE BodySlide files you need to take a closer look at the bones. These outfits commonly use custom cloth bones for realistic physics. After loading the project into OS you would normally go an delete all bones **but** you can't do that with custom cloth bones. You want to delete all bones that are part of the CBBE reference model and keep the custom bones.

When you've done all your fixing and move to the part where you need to copy the bone weights, you may have to increase the search radius by a bit so that the weights on the cloth bones are correctly copied over.



5.7 High Heels

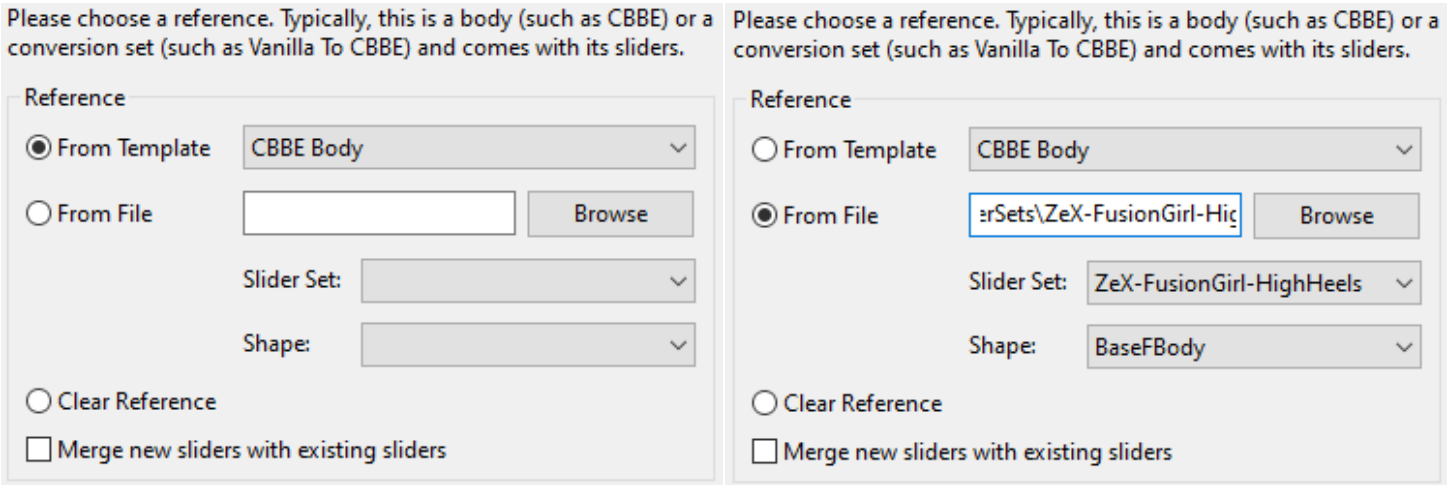
High Heels are the name of the game due to the arrival of the Fallout 4 High Heels System. There are **two** types of High Heels on the Nexus:
First the fake High Heels, developed before the FO4HHS existed. Lets take a look at the Latex Fantasy Outfit:

What you don't see in the picture is the fact that the feet are part of the outfit and not the reference model. They used a custom CBBE body for High Heels, cut the feet and changed them. These fake High Heels are called that way because they are the same height as the normal body.
You can convert these very fast and don't have to worry about the feet because it's part of the outfit and not of the body meaning that. after loading the Fusion Girl reference model, you can just zap the whole feet+part of the leg and never have to think about it again.

Second the real High Heels, developed using the FO4HHS. I'm talking about the FO4HHS the whole time but what does it do exactly? You can create outfits with real High Heels that are higher than the normal body. The problem is that the HH will clip through the ground because the height of the female body is defined in the *Fallout4.esm*. What the FO4HHS does is applying a command called modpos to the player or all NPCs that have HH equipped. The command changes the position of the target along the x,y or z axis and the Z-Axis is used for the height meaning that *modpos z 1* will position you one unit higher. The value, how high the character with HH should be positioned, can be defined in an *txt* file and is further explained on the mod page linked above.
That is enough theory lets look at an example Selfish Heels - High Heel Pack 1:

Those are the *FrankyPumps* and they use a custom Fusion Girl body. On the mod page of this guide is a file called *ZeX-FusionGirl-HH* available to download. You can **either** use the reference model included in the guide **or** use the slider data from the ZeX - Fusion Girl mod page (under Miscellaneous).
Both options are good and have their drawbacks so you should decide what works best for you, I will cover both options.

To get started with real HH, load the project you want to convert (that has real HH), delete old bones, load CBBEToFusionGirl reference model, conform everything but the HH (use the mask tool), set slider to 100 and set base shape.
Now you can **either** load the reference model included in the guide by going to *File->Load Reference* and selecting *From File*. Click the *Browse* button and navigate to *data/tools/BodySlide/SliderSets* and select *ZeX-FusionGirl-HighHeels.osp*.



You will notice that the feet of the body are already in a position for HH.

You don't have to worry about that little gap on the ankle. Next step is fixing clipping **but** you have to be very careful on the HH. You may be lucky and the HH cover the complete feet and than you don't have to do anything but creating a zap slider.
If you are not that lucky than you have to fix the clipping using the increase mesh tool and possible the move tool depending on the HH.

6 | Publishing your Conversion

So, it's finally time for you to publish your conversion. You **should** only publish the conversion if you believe that you are done. Here is a reminder of steps you should've done:

- **Received permission from the author of the original mod**
- Fixed clipping for the zero-slider preset
- Fixed clipping for every slider
- If the outfit is in slot 33: Created a zap slider and made it hidden and zapped by default
- Copied the bone weights
- Saved the project as a new file with a reasonable name and:
  - If the outfit is in slot 33: Copied the reference model
  - If the outfit is not in slot 33: Not copied the reference model
- Previewed the outfit in BodySlide and fixed problems
- Tested the outfit in game and fixed problems
- Took some sexy screenshots
- Created a SliderGroup file for the outfit
- Created a zip file containing **only** the BodySlide files of the project with **no** original files
- Created a page on the Nexus with **useful** information following a simple template (mine is with the source code)
- Double checked the contents of the file you uploaded to the Nexus

7 | Sliderlist

This is a list of all sliders from the Fusion Girl body. This table serves as a little helper but you should not take everything for true. It often depends on the type of outfit you're dealing with which is why I have used specific terms for each slider.
An **Extreme slider** should always be checked, **can be ignored often** depends on the outfit, sliders marked as *Ignored* can be ignored in 95% of all cases, if a slider **Should be checked** than do so as it's around 60% to have clipping, **Very important** sliders should always be checked and **if zapped** can be ignored if the body part is zapped

Slider	**Information**
Belly Pregnant	Extreme slider, will often give you clipping
Belly Big	Less extreme than Belly Pregnant
Belly Size	Care for the waist area
Belly Tuck	Care for the crotch area
Boobs Yuge	Extreme slider, will often give you clipping
Boobs Big	Less extreme than Boobs Yuge
Boobs Cleavage	Can often be ignored
Boobs Flat	Will give clipping if the mesh has a low poly count
Boobs Gravity	Can often be ignored
Boobs Height	Can often be ignored
Boobs Mellons	Can often be ignored
Boobs Perky	Can often be ignored
Boobs Push Up	Can often be ignored
Boobs Small	Can often be ignored
Boobs Together	Can often be ignored
Boobs Top Slope	Can often be ignored
Boobs Width	Can often be ignored
Boobs Tiny	Can often be ignored
Nipples Length	Extreme slider, will often give you clipping
Nipples Areola	Ignore
Nipples Distance	Ignore
Nipples Down	Ignore
Nipples Gone	Ignore
Nipples Shape	Ignore
Nipples Size	Ignore
Nipples Perkiness	Ignore
Nipples Puffy	Ignore
Nipples Up	Ignore
Nipples Tip	Ignore

Chest Depth	Should check
Chest Width	Should check
Waist Chubby	Should check
Waist Size	Should check
Waist Height	Should check
Waist Line	Should check
Back Size	Should check
Back Arch	Should check
Hips Bone	Should check
Hips Size	Should check
Hips Upper Width	Should check
Bum Size	Very important, always double check
Bum Crack	Very important, always double check
Bum Shape 1	Very important, always double check
Bum Shape 2	Very important, always double check
Bum Small	Very important, always double check
Bum Chubby	Very important, always double check
Bum Round	Very important, always double check
Bum Apple	Extreme slider, very important
Calf Size	Ignore if zapped
Calf Small	Can often be ignored
Legs Chubby	Extreme slider, very important; check with Thighs Size
Legs Shape	Can often be ignored
Legs Thin	Opposite of Legs Chubby, can often be ignored
Thighs Slim	Opposite of Thighs Size, can often be ignored
Thighs Size	Extreme slider, very important; check with Legs Chubby
Ankle Size	Ignore if zapped
Arms Chubby	Can often be ignored
Shoulder Smooth	Can often be ignored
Shoulder Tweak	Can often be ignored
Arms Size	Can often be ignored
Armpit Ajustment	Can often be ignored
Forearms Size	Can often be ignored
Torso Size	Should check
Sturnum Depth	Ignore
Sturnum Height	Ignore

Groin Position	Ignore
Groin Back	Ignore
Labia Minora Flat	Ignore
Labia Minora Longer	Ignore
Clitoras Size	Ignore
Clitoras Long	Ignore
Labia Majora Long	Ignore
Labia Majora Wide	Ignore
Labia Majora Inner	Ignore
AbDefinition	Should check
Body Toning	Only slider that also affects the feet!
TigerSanBB	Ignore, no one uses this
XunAbs	Should check
FFB Fitness 2	Should check
Athletic	Changes the whole body
SeveNBase Bombshell	Changes the whole body
Knee Height	Ignore
Shoulder Width	Can often be ignored

Table 1: Wow someone reads this

8 | Afterword

Omedetou, you made it all the way to the end of this long guide. I will use this section to deliver some of my thoughts going into developing this guide, state of Fallout 4 modding scene and the people who helped or justed wanted to say hi.

I *officially* started with this guide on August 1st but had already thought about most things two weeks before that. I took an *apprentice* on July 20th who actually tried converting from a CBBE Mesh to Fusion Girl BodySlide. The only kind real guide you had was those 10 steps on the CBBEToFusionGirl reference mod page but that one had no depth. As I got more questions from multiple people that all make the same mistakes or miss the same details, I decided it was time to finally start with this guide.

The watchful eye will probably know that this guide was written using LaTeX (or you just looked at the source code :p). I used LaTeX because I hate Microsoft, Open and Libre Office and used it before to write my thesis and multiple presentations. I simply could not resist writing my guide in LaTeX using Visual Studio Code as a programmer. I still haven't figured out the reason why some of the pictures are positioned so weird and why *wrapfigure* sometimes is forced to float. Anyway, I didn't know how many pages I would need for this guide and I hope it wasn't too much. The last guide I made was for Ultimate Skyrim to change all ugly NPCs and the PC to decent looking human beings. The scale of that guide isn't on par with this one because I had more to explain than simple modding procedures.

I actually would not have thought that I would end up doing BodySlide Conversions but here I am, having converted more than 30 outfits to the Fusion Girl body. The truth is that I returned to Fallout 4, after a long period of intensive Oblivion, Skyrim and Skyrim Special Edition modding, to start a new modded play through with Project Valkyrie as the main mod. I did a clean installation of the game and after getting every mod I wanted for the time being, I looked for some character presets because I am total shit at doing them. It was than that I found the Diana 2.0 LooksMenu Preset by my good friend dreamchaser1983. And that character also came with its own BodySlide preset but not for CBBE but for Fusion Girl. I quickly took interest in the Fusion Girl body and started looking into available conversions of the outfits I already downloaded. There were a few, most of them had clipping due to the huge ass of the preset. I had vacation so I thought I would just convert them as I already had some experience converting from CBBE to AB. Well, this is how I met your mother.

Like I said above, I actually wanted to play Fallout 4 again. I never really liked the modding scene of Fallout 4 that much. I prefer Skyrim because of the opportunities it has and the fact that I love magic related stories. Fallout 4 also wasn't really a good game. Compared to Fallout New Vegas or Fallout 3, Fallout 4 was more mainstream oriented with more guns than stories. The game was not a good base for modding which reflected in the amount of mods in each categories. You got a lot of weapons, outfits and of course retextures but again, same as the base game, not enough quest mods. In Skyrim you have good stuff like Vigilant, Moonpath to Elsweyr, Moon and Star, The Forgotten City, fucking Armorous Adventures and sure, Fallout 4 does have mods like Project Valkyrie I talked about or Fusion City Rising, Outcasts and Remnants or the game-jam like 50 Ways to Die at Dr. Nick's but the base game doesn't give much opportunities for story telling.

Now, I know that this little rant of mine is very biased and it shows how I felt **before** doing conversions. After I started, I had to get involved in the modding scene of Fallout 4 and made new friends, found new amazing authors and actually started to enjoy Fallout 4. In programming you have a multitude of languages to choose from. "You program to the strength and weaknesses of the language". I believe that this can be applied to modding.

"You mod to the strength and weaknesses of the game" - erri120

Yeah, I like that. Anyway, being involved and being an author instead of an user changed my perspective on the game. I don't know how long I will continue doing conversions or how many I will do, which is the reason I hope you learned something from this guide and decide to start converting outfits yourself.

Thanks

Thanks to dreamchaser1983 for making me interested in Fusion Girl, helping me getting started and taking some amazing screenshots.

Thanks to the whole Fusion Girl team for creating this amazing body and helping me on the Discord.

Thanks to all mod authors of outfits I converted. I loved all of the outfits.

Thanks to Souichirou for being my apprentice.

People who wanted to say hi:

vampiiluk and dreamchaser reacted with *:ok_hand:*
Vault Tec Rep replied with *"Awesome!"*