

# FNGA Screening Tool

## INSTRUCTION SET



NATURAL GAS *limitless opportunity*

# Table of Contents



NATURAL GAS *limitless opportunity*

Download and Initial Setup ..... 3

Running the Simulation ..... 7

Common Errors..... 11

# Download and Initial Setup

1. Navigate to: FloridaGas.org/ALF
2. Scroll down to “Download Simulator”
3. Save your file in an easily accessible location on your computer.

*NOTE: This file must be saved to your local machine “This PC”, and not to any cloud service such as OneDrive.*

4. Once the download has finished, navigate to the location of the zip file and extract the files.

*In this example it is located: “C:\Users\<username>\Documents\ALF.zip”*

 ALF	6/21/2024 12:59 PM	Compressed (zipp...	56,183 KB
---	--------------------	---------------------	-----------

*Right click on ALF.zip and select Extract All...  
You should see a new folder appear also titled ALF as shown below*

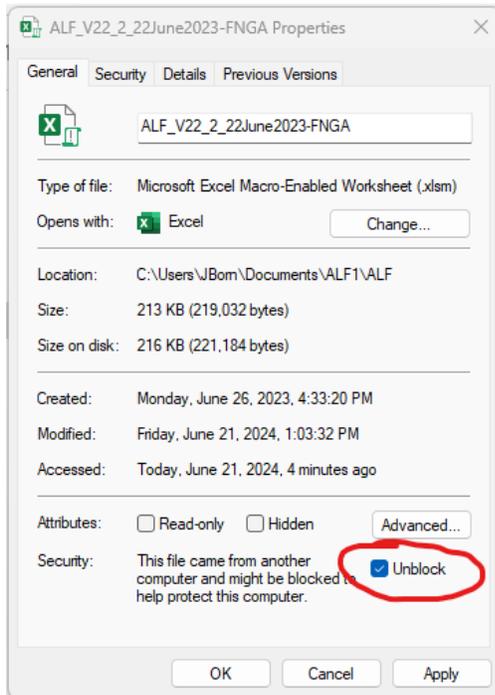
 ALF	6/21/2024 1:04 PM	File folder	
---	-------------------	-------------	--

5. Open the newly created ALF folder:

*You should see the following contents:*

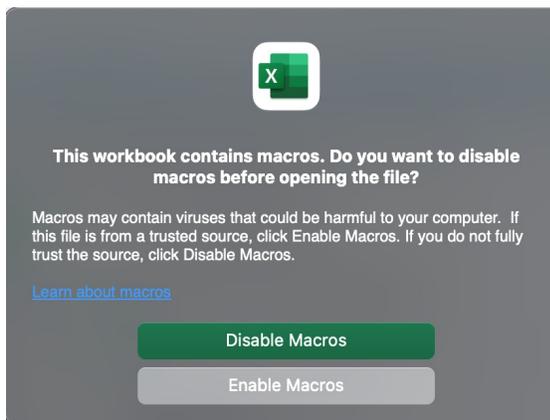
Name	Date modified	Type	Size
 EPlus	6/21/2024 1:03 PM	File folder	
 Input	6/21/2024 1:04 PM	File folder	
 Weather	6/21/2024 1:04 PM	File folder	
 ALF_V22_2_22June2023-FNGA - Copy	6/21/2024 1:03 PM	Microsoft Excel M...	214 KB
 ALF_V22_2_22June2023-FNGA	6/21/2024 1:03 PM	Microsoft Excel M...	214 KB

6. PC Users: Right Click on ALF\_V22\_2\_22June2023-FNGA and click Properties  
You'll see the following window appear: Check Unblock and Apply



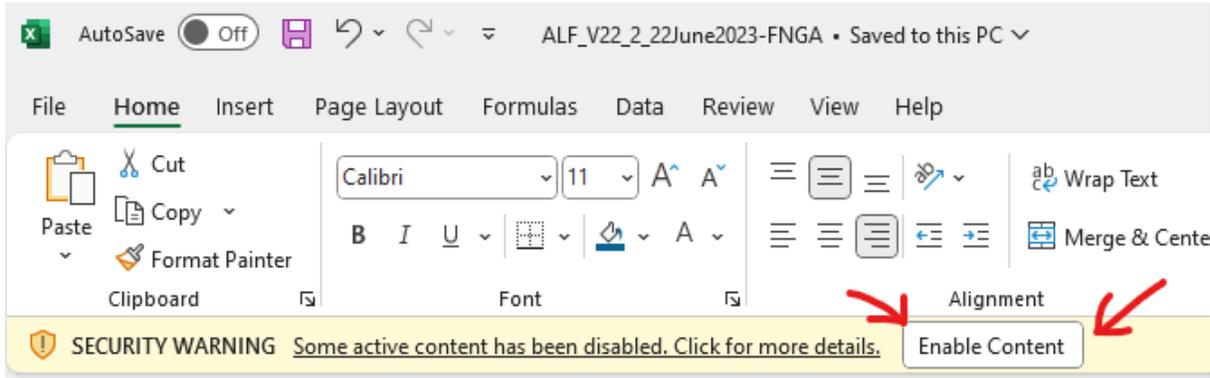
7. Open the file ALF\_V22\_2\_22June2023-FNGA

*This document utilizes macros. You may be prompted to enable macros depending on your computer's settings.*



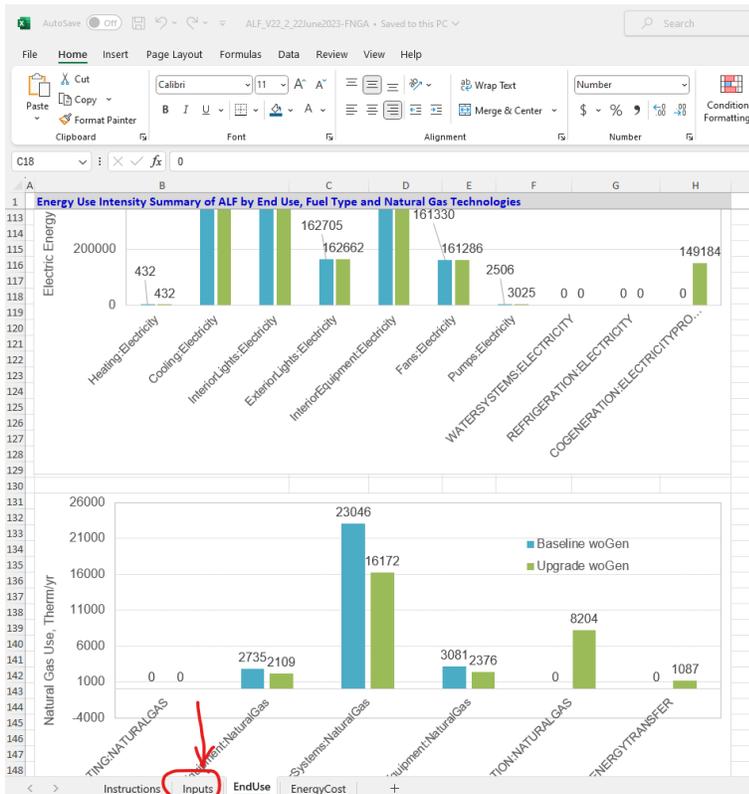
# Download and Initial Setup

8. Click Enable Content at the top of the Excel Screen



9. On the bottom left corner of the excel window, you'll see four tabs labeled: Instructions / Inputs / EndUse / EnergyCost

Click on Inputs



10. You should see the following screen:

© Copyright UCF

### Natural Gas Technologies Screening Tool Inputs

Building and Site Location		Units	BASELINE	UPGRADE
Building Location		-	Sarasota	Sarasota
Building Story		-	FOUR STORY	FOUR STORY
Building Total Floor Area		sf	200256	200256

Water Heaters Model Input		Units	BASELINE	UPGRADE
SWH Type		-	Storage	Storage
SWH Fuel Type		-	NaturalGas	NaturalGas
SWH Thermal Efficiency		%	0.90	0.95
Has On-Site Laundry Water Heater		-	Yes	Yes
LWH Type		-	Storage	Storage
LWH Fuel Type		-	NaturalGas	NaturalGas
LWH Thermal Efficiency		%	0.90	0.95

On-Site CHP Model Input		Units	BASELINE	UPGRADE
Has On-Site Generator		-	No	Yes
Generator Rated Power		kW	80	80
Generator Operation Scheme		-	Baseload	DemandLimit

Actual Facility Energy Uses (Utility)		Units	Value
Facility Annual Electric Use		kWh/yr	1944385
Facility Annual Gas Use		Therms/yr	28862

Electricity and Natural Gas Energy Rates		Units	Value
Electricity Rate		\$/kWh	0.110
Natural Gas Rate		\$/Therms	1.050

Site-to-source Energy Conversion Factors		Units	Value
Electricity		-	3.167
Natural Gas		-	1.084

It should be noted that the simulation itself compares two separate states. The **BASELINE** versus the **UPGRADE**.

## 1. Building and Location

Building and Site Location	Units	BASELINE	UPGRADE
Building Location	-	Sarasota	<input type="text" value="Sarasota"/>
Building Story	-	FOUR STORY	FOUR STORY
Building Total Floor Area	sf	200256	200256

The Building Location can be changed to one of six Florida cities: Jacksonville / Miami / Orlando / Sarasota / Tampa / Tallahassee

The Building Story can be changed: FOUR STORY / SIX STORY

The Building Total Floor Area measured in square feet: 200256

## 2. Water Heater Input

Water Heaters Model Input	Units	BASELINE	UPGRADE
SWH Type	-	Storage	Storage
SWH Fuel Type	-	NaturalGas	NaturalGas
SWH Thermal Efficiency	%	0.90	0.95
Has On-Site Laundry Water Heater	-	Yes	Yes
LWH Type	-	Storage	Storage
LWH Fuel Type	-	NaturalGas	NaturalGas
LWH Thermal Efficiency	%	0.90	0.95

The SWH (Standard Water Heater) Type can be changed: Storage / Tankless

The SWH Fuel Type (Power Source) can be changed: NaturalGas / Electric

The SWH Thermal Efficiency can be changed: 0.90 - 0.95 Default

The same variables can be changed for Laundry Water Heater if YES is selected.

### 3. Double Check UPGRADE On-Site Generator Selection

On-Site CHP Model Input	Units	BASELINE	UPGRADE
Has On-Site Generator	-	No	Yes
Generator Rated Power	kW	80	80
Generator Operation Scheme	-	Baseload	DemandLimit

*NOTE: ONLY If the location currently has an On-Site Generator should baseline be YES. IF site does NOT plan to upgrade to on-site generation, change UPGRADE to NO.*

### 4. Costs and Consumption

Actual Facility Energy Uses (Utility)	Units	Value
Facility Annual Electric Use	kWh/yr	1944385
Facility Annual Gas Use	Therms/yr	28862

Electricity and Natural Gas Energy Rates	Units	Value
Electricity Rate	\$/kWh	0.110
Natural Gas Rate	\$/Therms	1.050

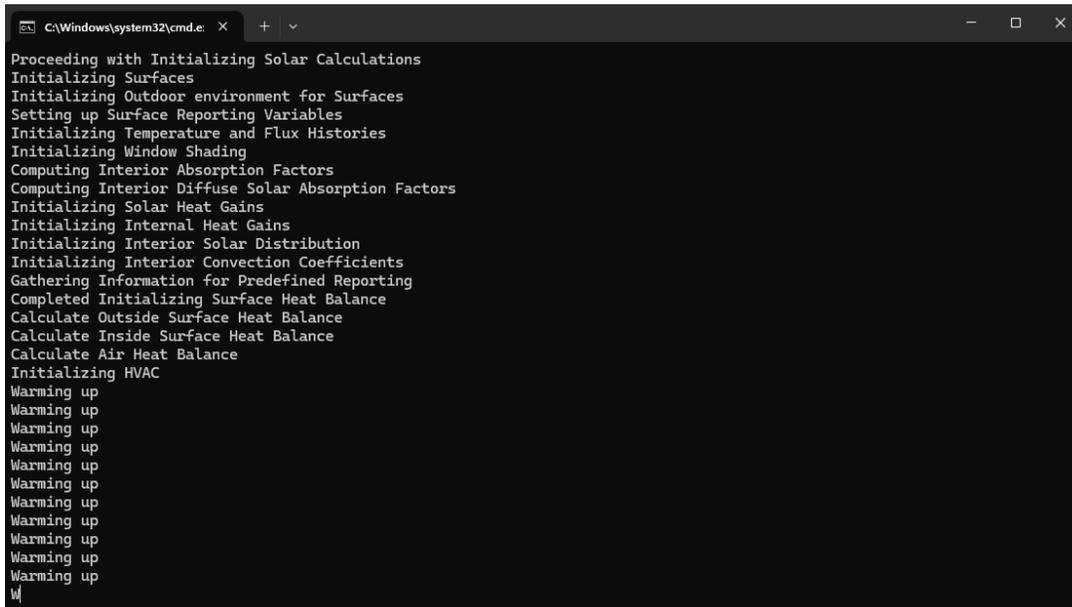
  

Site-to-source Energy Conversion Factors	Units	Value
Electricity	-	3.167
Natural Gas	-	1.084

*These are the costs and consumption values to be used during the simulation. The default values are shown above.*

5. Once all desired parameter values are set, click Run Simulation.

You should see the following command prompt window appear:



```
CA:\Windows\system32\cmd.e. x + v
Proceeding with Initializing Solar Calculations
Initializing Surfaces
Initializing Outdoor environment for Surfaces
Setting up Surface Reporting Variables
Initializing Temperature and Flux Histories
Initializing Window Shading
Computing Interior Absorption Factors
Computing Interior Diffuse Solar Absorption Factors
Initializing Solar Heat Gains
Initializing Internal Heat Gains
Initializing Interior Solar Distribution
Initializing Interior Convection Coefficients
Gathering Information for Predefined Reporting
Completed Initializing Surface Heat Balance
Calculate Outside Surface Heat Balance
Calculate Inside Surface Heat Balance
Calculate Air Heat Balance
Initializing HVAC
Warming up
W
```

This is the simulator, the text is informative of the current process. It should be noted that there are TWO cases ran with each simulation. You'll see CASE\_1\_OF\_2 and CASE\_2\_OF\_2 both cases must finish for the simulation to be complete.

# Running the Simulation

- When the simulation is finished the black command prompt window will disappear! Return to the main excel screen located below if it is not displayed, then click get output.

**NOTE: YOU MUST CLICK "GET OUTPUT" AFTER SIMULATION COMPLETES**

© Copyright UCF  
Natural Gas Technologies Screening Tool Inputs

Run Simulation **Get Output**

Building and Site Location		Units	BASELINE	UPGRADE
Building Location	-		Jacksonville	Jacksonville
Building Story	-		FOUR STORY	FOUR STORY
Building Total Floor Area	-	sf	200256	200256

Water Heaters Model Input		Units	BASELINE	UPGRADE
SWH Type	-		Storage	Storage
SWH Fuel Type	-		NaturalGas	NaturalGas
SWH Thermal Efficiency	%		0.90	0.95
Has On-Site Laundry Water Heater	-		Yes	Yes
LWH Type	-		Storage	Storage
LWH Fuel Type	-		NaturalGas	NaturalGas
LWH Thermal Efficiency	%		0.90	0.95

On-Site CHP Model Input		Units	BASELINE	UPGRADE
Has On-Site Generator	-		No	Yes
Generator Rated Power	-	kW	80	80
Generator Operation Scheme	-		Baseload	DemandLimit

Actual Facility Energy Uses (Utility)		Units	Value
Facility Annual Electric Use	-	kWh/yr	1944385
Facility Annual Gas Use	-	Therms/yr	28862

Electricity and Natural Gas Energy Rates		Units	Value
Electricity Rate	-	\$/kWh	0.110
Natural Gas Rate	-	\$/Therms	1.050

Site-to-source Energy Conversion Factors		Units	Value
Electricity	-		3.167
Natural Gas	-		1.084

- On the Bottom Left corner of the excel sheet, the EndUse and EnergyCost tabs are now updated.

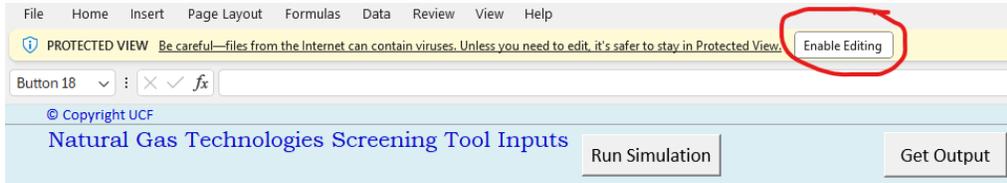
A	B	C	D	E	F	
1	© Copyright UCF					
2	<b>Energy and Energy Cost Savings Estimates of Service Water Heating and CHP Natural Gas Technologies</b>					
3	Total Conditioned Floor Area	sf	200256			
4	Conversion Factor kBtu to kWh	kWh/kBtu	0.2930710			
5	Conversion Factor kBtu to Therm	Therm/kBtu	0.0100024			
6	Electricity Rate	\$/kWh	0.110			
7	Natural Gas Rate	\$/Therm	1.050			
10	<b>Site Annual Water Heating Energy Use</b>		<b>Units</b>	<b>Baseline woGen</b>	<b>Upgrade wGen</b>	<b>Savings</b>
11	Electricity Use for Water Heating	kWh	-	-	-	
12	Natural Gas Use for Water Heating	Therms	22,271	20,263	2,009	
13	<b>Site Annual Facility Water Heating Energy Cost</b>					
14	Water Heating Electric Energy Cost	\$	-	-	-	
15	Water Heating Natural Gas Cost	\$	23,385	21,276	2,109	
16	Water Heating Total Energy Cost	\$	23,385	21,276	2,109	
17	<b>Water Heating Technology Recommendation</b>					
18	Water Heating Annual Energy Cost Savings	\$			2,109	
19	Likely A Good Investment					
21	<b>CHP Annual Co-Generation Energy Use / Production</b>		<b>Units</b>	<b>Baseline woGen</b>	<b>Upgrade wGen</b>	
22	CHP Electricity Produced	kWh	-	138,721		
23	CHP Heat Recovered	Therms	-	1,362		
24	CHP Total Energy Produced	-	-	-		
25	CHP Natural Gas Consumption	Therms	-	10,279		
26	<b>Site Annual CHP Energy Cost</b>					
27	CHP Electric Produced Energy Cost	\$	-	15,259		
28	CHP Heat Recovered Energy Cost	\$	-	1,430		
29	CHP Electric and Heat Produced Energy Cost	\$	-	16,690		
30	CHP Natural Gas Consumption Cost	\$	-	10,793		
31	CHP Net Energy Cost Savings	\$	-	5,896		
32	<b>CHP Technology Recommendation</b>					
33	CHP Annual Energy Cost Savings	\$			5,896	
34	CHP Is Likely A Good Investment					
36	<b>Site Annual Energy Used and Produced</b>		<b>Units</b>	<b>Baseline woGen</b>	<b>Upgrade wGen</b>	<b>Savings</b>

Instructions | Inputs | EndUse | **EnergyCost** | +

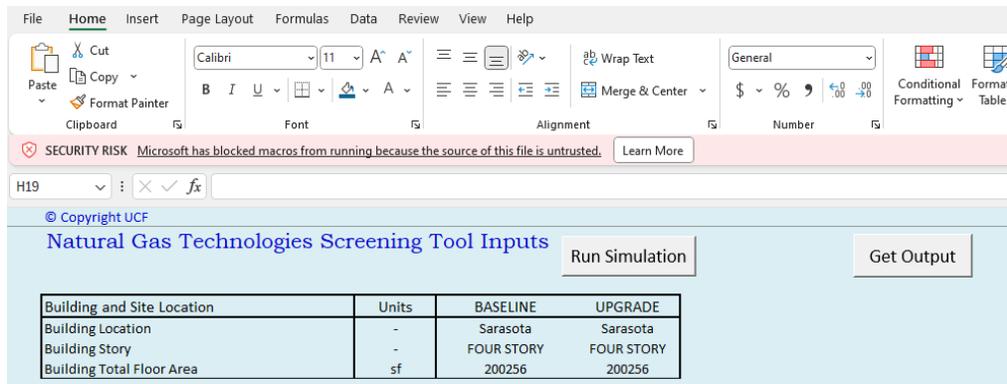
- DONE

There are a few common errors you'll encounter.

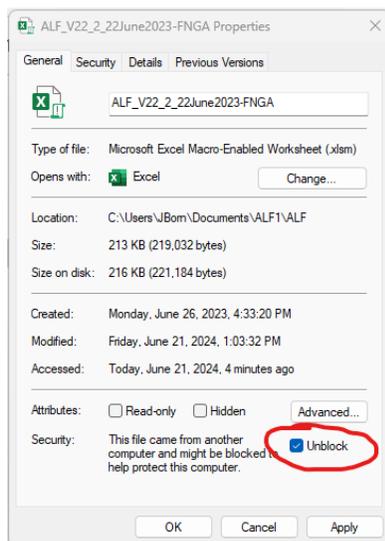
1. Run Simulation button is NOT clickable  
**Resolution:** You must click "Enable Editing"



2. SECURITY RISK "Microsoft has blocked macros from running because the source of this file is untrusted"



**Resolution:** The Unblock option must be checked as shown!



### 3. Run Simulation button click results in “Errors Found”

© Copyright UCF  
 Natural Gas Technologies Screening Tool Inputs

Run Simulation      Get Output

Building and Site Location	Units	BASELINE	UPGRADE
Building Location	-	Sarasota	Sarasota
Building Story	-	FOUR STORY	FOUR STORY
Building Total Floor Area	sf	200256	200256

blank

Water Heaters Model Input	Units	BASELINE	UPGRADE
SWH Type	-	Storage	Storage
SWH Fuel Type	-	NaturalGas	NaturalGas
SWH Thermal Efficiency	%	0.90	0.95
Has On-Site Laundry Water Heater	-	Yes	Yes
LWH Type	-	Storage	Storage
LWH Fuel Type	-	NaturalGas	NaturalGas
LWH Thermal Efficiency	%	0.90	0.95

blank

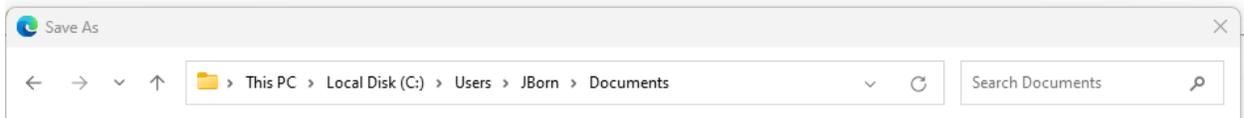
On-Site CHP Model Input	Units	BASELINE	UPGRADE
Has On-Site Generator	-	No	Yes
Generator Rated Power	kW	80	80
Generator Operation Scheme	-	Baseload	DemandLimit

Errors Found

https://d.docs.live.net/3482f937624477b7/Desktop/Consulting/FNGA/ALF/ALF/EPPlus is not valid. Please enter a valid Main Path  
 Note: A list of key EnergyPlus files is found on the Instructions Tab.  
 https://d.docs.live.net/3482f937624477b7/Desktop/Consulting/FNGA/ALF/ALF/Input is not valid. Please enter a valid Input File Path  
 https://d.docs.live.net/3482f937624477b7/Desktop/Consulting/FNGA/ALF/ALF/Weather is not valid. Please enter a valid Weather File Path

Abort    Retry    Ignore

**Resolution:** You must not save the file to OneDrive! File must be saved locally. Check file location starts with This PC



not “One Drive” Or “Low Storage” I.E. Saved to OneDrive

