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Name: _____

Date: ___ / ___ / ___ Class Hour: ___

SOLAR SITE ANALYSIS:
HELIOSCOPE SOLAR DESIGN SOFTWARE

INTRODUCTION:

Helioscope is a web-based sales and design tool for solar professionals. It can be used to create professional proposals. This software can also simulate shade analysis from 3D objects you model. You can select different components (including types of modules and inverters) and electricity production simulated.

GETTING STARTED:

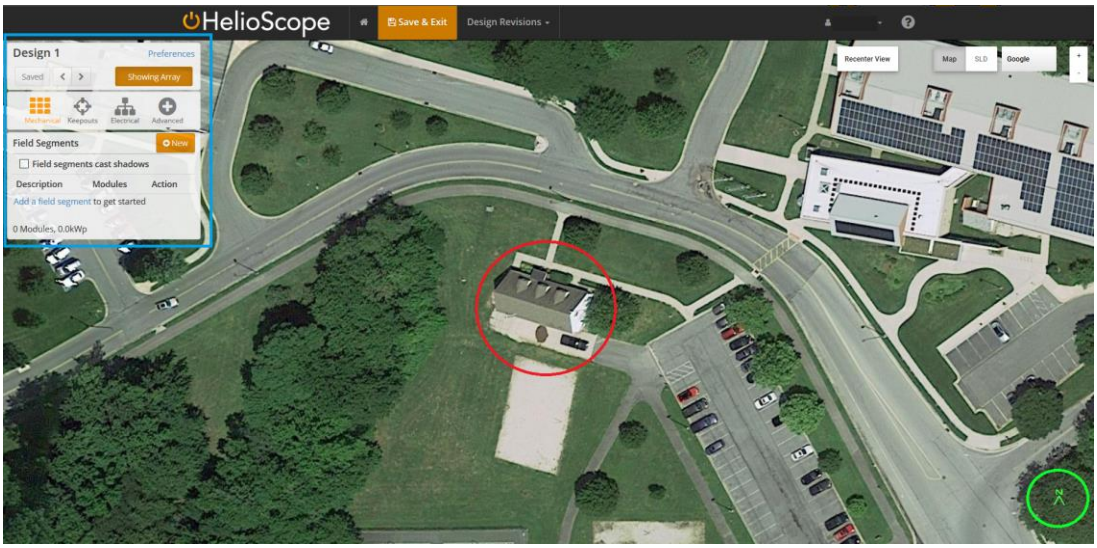
Sign up for a free trial of helioscope using your school email. Your instructor may request an extension of the free trial, so it is important to use your assigned school email. Activate your account using the email your received from Folsom Labs.

Before getting started with the assignment, watch the getting starting video “5 minute Residential Solar Design.” The video goes fast, so you may want to pause and try some of the steps as they do them. Once you have the basics of starting a system design you can move on to part 1.

PART ONE: Design of a known location.

Create as large of a solar system as you can fit on the “White House” of Dover Campus of Delaware Tech. The address for this system is 100 Campus Drive, Dover DE. The address is for the entire campus, so make sure you adjust the location to the property below, circled in red.

INSERT IMAGE



Use the entire south facing roof. You may keep the modules as default or change them. Be sure to align the modules in way that would make sense to install them. Be sure your final design is clean and is laid out in a professional way.

Once you layout the mechanical aspects of the system, identify a keepout for the plumbing and heating system on the lower right-hand side of the roof.

Model the tree on the right-hand side of the building. The tree is approximately 45 feet high.

Be sure to save your final design and submit to instructor for credit.

Questions to answer:

How large of a system were you able to create?

What is the annual kWh production from this system?

What month do you have the highest production? Is this as expected? Why or why not?

What is the load ratio for your design? Do you think this is acceptable? How might you change it?

What is the performance ratio for your design? How could you increase this number?

What are the total system losses in your design?

What is the largest source of system losses in your design?

What are some ways you can reduce your system losses?

What system losses are you likely not able to eliminate completely?

What does TMY stand for?

What weather dataset was your used for your design? Do you think it is accurate?

PART TWO: Annual Production Report/ Remote Site Assessment

Export the report from the design you created in part one. Use that report to create a remote site assessment for the client. This remote site assessment should be approximately 2 pages including pictures and charts. This is a summary of proposed project and is used to “sign a new customer”. Be sure to include enough description of the property so that someone who has never been there can follow.

Include these items in the remote site assessment

- Description of the property
- Determine house orientation
- Determine roof tilt/angle, available area
- Determine shading
- Evaluate obstructions
- Inquire about type and condition of roof
- Determine ownership status
- Determine type of property (residential commercial, non-profit)
- Estimate the solar production
- Identify any shading issues and make recommendations.
- Identify if this property is a good candidate for solar.
- Include pictures

Reminder, you can use some of the images and charts created from that annual production report. You can also export the data (from the monthly production chart) and edit it in excel if you prefer.

PART THREE: Create a remote site assessment for a property of your choosing

Select a property you want to do a solar analysis. This can be your home, or any property you are familiar with. Model the solar system that could be installed on the property. Use the helioscope to gather the information, and then write a remote site assessment for this property just like you did in part two.

Be sure to include the following information.

- Description of the property
- Determine house orientation
- Determine roof tilt/angle, available area
- Determine shading
- Evaluate obstructions
- Inquire about type and condition of roof
- Determine ownership status
- Determine type of property (residential commercial, non-profit)
- Estimate the solar production
- Identify any shading issues and make recommendations.
- Identify if this property is a good candidate for solar.
- Include pictures

This should be about two pages including any relevant graphs and pictures you want to include. Be sure to be professional/formal in your writing. This type of information would be shared with a client who expressed interest in installing solar on their property. While the client should be familiar with the property, you want to include enough details so that someone unfamiliar with the location and property type could follow.

PART FOUR: Trouble shooting

For this section, your instructor will share a design with you in helioscope. You need to evaluate the design and determine how you can make it better. Things you should evaluate include (but are not limited to) the alignment of the inverter/modules, shading, and/or keepouts.

When you are happy with your design, you can export the report and submit to instructor for credit. Be prepared to discuss and defend the changes you made, and why you made them.

Questions to answer:

1. What changes did you make to inverter and/or module? Why did you make those changes? What affect did those changes have on your AC output?
2. What changes did you make to the keepouts or trees from the original system? Why did you make those changes? What affect did those changes have on your AC output?
3. Did you add or remove any modules from the original design? Why or why not? Defend your decision.