



SunSource® Commercial Energy System Planning Checklist

CUSTOMER NAME:		DATE:	
CUSTOMER ADDRESS: (STREET, CITY, STATE AND ZIP CODE)		ELECTRIC UTILITY:	
QUOTE NO.:		ORDER NO.:	

SECTION I - SITE AND CUSTOMER

1.	Does site have the appropriate voltage and building electrical configuration?	Commercial Single-Phase HVAC Unit Applications (Installed On A Single-Phase Site) – The utility-interactive SunSource® Commercial Energy System is for split-phase power and will only interconnect and supply power if the grid power meets the following specifications: <ul style="list-style-type: none"> • L1 - L2 voltage measures between 211 Volts and 264 Volts _____ • Line to neutral/ground voltage measures between 106 and 132 Volts _____ • Frequency measures between 59.3 Hz and 60.5 Hz _____ 	240/120 ¹ (1-Phase) <input type="checkbox"/> 208/120 ² (1-Phase) <input type="checkbox"/>
		Commercial Three-Phase HVAC Unit Applications (Installed On A Three-Phase Site) – The utility-interactive SunSource® Commercial Energy System will only interconnect and supply power if the grid power meets the following specifications: <ul style="list-style-type: none"> • L1-L2-L3 voltage measures between 183 Volts and 229 Volts _____ • Line to neutral/ground voltage measures between 106 and 132 Volts _____ • Frequency measures between 59.3 Hz and 60.5 Hz _____ • Nominal 208 VAC Wye configuration _____ <p><i>NOTE: A transformer must be used to step-down 460 and 230VAC building voltage to the appropriate levels and adapt to delta systems.</i></p>	208 WYE <input type="checkbox"/> 230 Delta <input type="checkbox"/> 460/277 WYE <input type="checkbox"/> 460 Delta <input type="checkbox"/> Other: _____
2.	Array Information	<ul style="list-style-type: none"> • No. of columns: _____ • No. of solar modules: _____ • No. of rows: _____ • Distance to RTU (ft.): _____ • Distance to distribution panel (ft.): _____ 	
3.	Is the building's electrical distribution panel adequate?	Generally, the distribution panel should be rated 75 AMP for 230 VAC systems or 40 Amp for 460 VAC systems for one SunSource® Commercial Energy system installation. For two systems, the panel should be twice as large (see also Code Compliance section).	YES <input type="checkbox"/> NO <input type="checkbox"/>
4.	A. Does site have good southern exposure?	Perform a solar site survey using a <i>Solar Pathfinder™</i> or other survey tool to assess the solar resource available.	YES <input type="checkbox"/> NO <input type="checkbox"/>
	B. Is it free of shading?	Next, use the web-based program, PVWatts (ver. 1), from the National Renewable Energy Lab, to estimate the monthly and annual solar energy generation potential. <i>NOTE: For more information concerning Solar Pathfinder™ see Lennox Corp 1104-L1, Application and Design Guidelines for more information.</i>	YES <input type="checkbox"/> NO <input type="checkbox"/>

¹Split-phase as in residential service or derived from 240 Delta with center-tap neutral.

²Service from 208 WYE (use -208 version microinverters.)

5.	Is the roof suitable for mounting solar modules?	<p>1. Is there enough area for the solar modules? <i>One solar module requires about 15 square feet.</i></p> <p><i>NOTE: Do not exceed the maximum number of solar modules that can be connected to each HVAC unit (15 for 1-phase applications, 21 for 3-phase applications).</i></p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p>
		<p>2. What type of roof is it? <i>There are several types of mounting kits to accommodate the more common styles of roofs. (Since the solar modules must be removed during a re-roof, it is best not to install the solar modules on a roof in poor condition. Take note of the pitch of the roof and the height of the eaves. OSHA has fall protection compliance guidelines. For example, see OSHA Directive STD 03-00-001.</i></p> <ul style="list-style-type: none"> • Pitch: _____ • Height of eaves: _____ 	<p>Flat Roof <input type="checkbox"/></p> <p>Pitch <input type="checkbox"/></p> <p>Standing Seam <input type="checkbox"/></p>
		<p>3. In flat roof applications, will stanchions (attached to the building structure under the roof) be required instead of OR as a supplement to a simple ballast system?</p> <p>If yes, provide information on the planned system used to secure the solar array:</p> <p>_____</p> <p><i>NOTE: Lennox is not responsible for determining design requirements and roof attachments. The American Society of Civil Engineers standard ASCE 7-05 provides an analytic method for determining wind, snow and seismic loads. Some items to consider when selecting a SunSource system are: exposure category (B,C,D), design wind speed, design snow load, roof maximum load limits, etc.</i></p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p>
6.	Will the solar modules be closer to HVAC unit or distribution panel?	<p>Wiring may be routed to the solar power circuit from either the HVAC rooftop unit or the electrical distribution panel. For speed and ease of installation, route wiring from the closer location.</p>	<p>HVAC <input type="checkbox"/></p> <p>PANEL <input type="checkbox"/></p>
7.	Check for ease of modifications to distribution panel.	<p>If the solar power circuit back feeds through the HVAC branch circuit breaker (in the distribution panel), it will need to be relocated to a slot that is at the opposite end from the main breaker.</p> <p><i>NOTE: the HVAC branch circuit breaker does not need to be relocated if the sum of the main panel breaker rating and the solar fuse (F54) rating is less than the electrical distribution panel's bus bar rating.</i></p> <p>If the solar power circuit is run directly to the distribution panel, a new 15 AMP breaker will need to be installed in one of the slots that is at the opposite end from the main breaker.</p> <p>This step is to get an early view of issues such as no available slots or difficulty relocating the HVAC branch circuit breaker.</p> <p>In addition, the back feed breaker, whether it is the HVAC branch circuit breaker or a separate 15 AMP breaker, is suitable if it is a conventional breaker and the terminals are NOT marked Line and Load. It should not be a GFCI or arc-fault type circuit breaker.</p>	<p>EASY <input type="checkbox"/></p> <p>HARD <input type="checkbox"/></p>



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8.	<p>Does the customer have an “always on” internet connection?</p>	<p>An internet connection, with broadband router is required for the <i>Envoy Communications Gateway</i> to connect to the monitoring service. While use of the Envoy and the service are highly recommended, they are not required for the solar power system to operate.</p> <p><i>NOTE: If a transformer is used, a Line Communications Filter will be required and should be connected on the “solar” side of the transformer.</i></p>	<p>Envoy <input type="checkbox"/></p> <p>LCF <input type="checkbox"/></p> <p>No Monitoring <input type="checkbox"/></p>
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SECTION II – INTERCONNECTION AND NET-METERING

9.	<p>Does the electric utility have a net-metering program?</p>	<p>It is necessary to notify the electric utility of the customer’s intention to install a utility-interactive solar power generation system. Most utilities are familiar with these systems and will already have a policy and rules for “net-metering”.</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p>
10.	<p>Does the utility program have any special requirements?</p>	<p>Some utilities will require an indicating, lockable disconnect switch on the solar power system. If the utility has some form of incentive program, they may require the solar power system to be sub-metered. When the utility has requirements like this, they sometimes provide the required hardware.</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p>
11.	<p>If there is an incentive program, is there a minimum kW threshold?</p>	<p>For example, some utilities require a 1kW and 2kW threshold for some rebate / incentive programs.</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p>
12.	<p>Does customer understand this is not a grid independent system?</p>	<p>It is important to make sure the customer understands that this is a utility-interactive PV system and <u>WILL NOT</u> generate power when the grid is down. In addition the SunSource® Commercial Energy System will not produce power concurrently with a back-up generator.</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p>

SECTION III - CODE COMPLIANCE

13.	<p>Have all the local electrical code requirements been identified?</p>	<p>In almost all US jurisdictions, the National Electric Code (NEC) will be cited as the authority for electrical inspections and in Canada, it is the Canadian Electric Code (CE Code). There may be additional local requirements. NEC section 690 gives the requirements for solar PV installations. Wind and structural load calculations are sometimes requested by code officials.</p> <p>If this is the first time to install a SunSource® Commercial Energy System in this jurisdiction, it is advisable to meet with the local inspection department to find out what requirements exist. This will save time in the long run since the permit submission can address any special requirements.</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p>
14.	<p>Is grounding electrode required for the solar PV systems?</p>	<p>Solar PV AC modules are not required by the NEC to have a separate grounding electrode but the local jurisdiction may require one to be installed.</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p>

This checklist is to be used as an aid in assessing the conditions that prevail at a particular site. A **NO** checkbox answer does not necessarily mean a system cannot be installed. Rather, it means that there may be special activities, such as extra electrical work required.

For more detailed information see Lennox Corp. 1104-L1 SunSource® Commercial Energy System application and design guidelines.