

Heating System Proposal Questionnaire

Hydronic heat systems use water as the medium to transmit heat which is more efficient and flexible than using air. This questionnaire is meant to capture information needed to design a cost effective and efficient hydronic heating system. If you have difficulty completing this form or have any questions, please let us know and we will be happy to guide you through the process.

CONTACT	Company: _____ Name: _____ Phone: _____ Fax: _____ email: _____	Address 1: _____ Address 2: _____ City: _____ State: ____ Zip: _____																																									
DEALER	Company: _____ Name: _____	Phone: _____ email: _____																																									
PROJECT LOCATION	City: _____ State: _____	FUEL <input type="checkbox"/> NG <input type="checkbox"/> Biomass <input type="checkbox"/> LP <input type="checkbox"/> Electric <input type="checkbox"/> Fuel Oil <input type="checkbox"/> Other: _____	POWER _____ VAC _____ Ph _____ Hz																																								
CROPS	Crop(s): _____ Typical Container Size: _____	Additional Information: _____																																									
GROWING SURFACES	Benches: <input type="checkbox"/> Stationary <input type="checkbox"/> Rolling <input type="checkbox"/> Mobile Tray <input type="checkbox"/> Trough/NFT	Bench Surface: <input type="checkbox"/> Tray <input type="checkbox"/> Expanded Metal <input type="checkbox"/> Wood <input type="checkbox"/> Other: _____	Floor/Ground: <input type="checkbox"/> Concrete <input type="checkbox"/> Soil/Raised Bed <input type="checkbox"/> Gravel/Sand	Other: <input type="checkbox"/> Vine/Row <input type="checkbox"/> Hanging Basket <input type="checkbox"/> Rafts <input type="checkbox"/> Other: _____																																							
TEMPERATURE	Indicate what temperature (°F) you wish to maintain for each month. <table style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td> </tr> <tr> <td>Soil</td> <td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td> </tr> <tr> <td>Air</td> <td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td> </tr> </table>			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Soil	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Air	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	IRRIGATION PREHEAT	Min. Water Temp. (°F): _____ Desired Temp. (°F): _____ Desired Flow (gpm): _____ Usage (min/hr): _____
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec																															
Soil	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>																															
Air	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>																															
HEAT LOCATION	Benches: <input type="checkbox"/> In <input type="checkbox"/> On <input type="checkbox"/> Under	Floor/Ground: <input type="checkbox"/> In <input type="checkbox"/> On	Space: <input type="checkbox"/> Overhead <input type="checkbox"/> Perimeter	Rail Systems: <input type="checkbox"/> Cart <input type="checkbox"/> Hanging Basket <input type="checkbox"/> Irrigation Booms	ZONES	<input type="checkbox"/> As few as possible <input type="checkbox"/> Qty. _____																																					
SUPPLEMENTAL HEAT	Heating your growing surface may not provide adequate heat to maintain your desired structure temperature. If this is the case, in order to fulfill the structures heat load: <input type="checkbox"/> I will provide supplemental heat. <input type="checkbox"/> Propose the best solution. <input type="checkbox"/> I prefer additional hydronic heat. <input type="checkbox"/> I prefer unit heaters.																																										
HEAT SOURCE	<input type="checkbox"/> Provide new boiler system <input type="checkbox"/> Reuse my boiler if possible Make: _____ <input type="checkbox"/> with redundancy Heat Output: _____ Model: _____																																										
CONTROLS	How will you control your heating system? <input type="checkbox"/> Please provide BioTherm stand-alone controls. <input type="checkbox"/> I will use another control system. Manufacturer: _____																																										

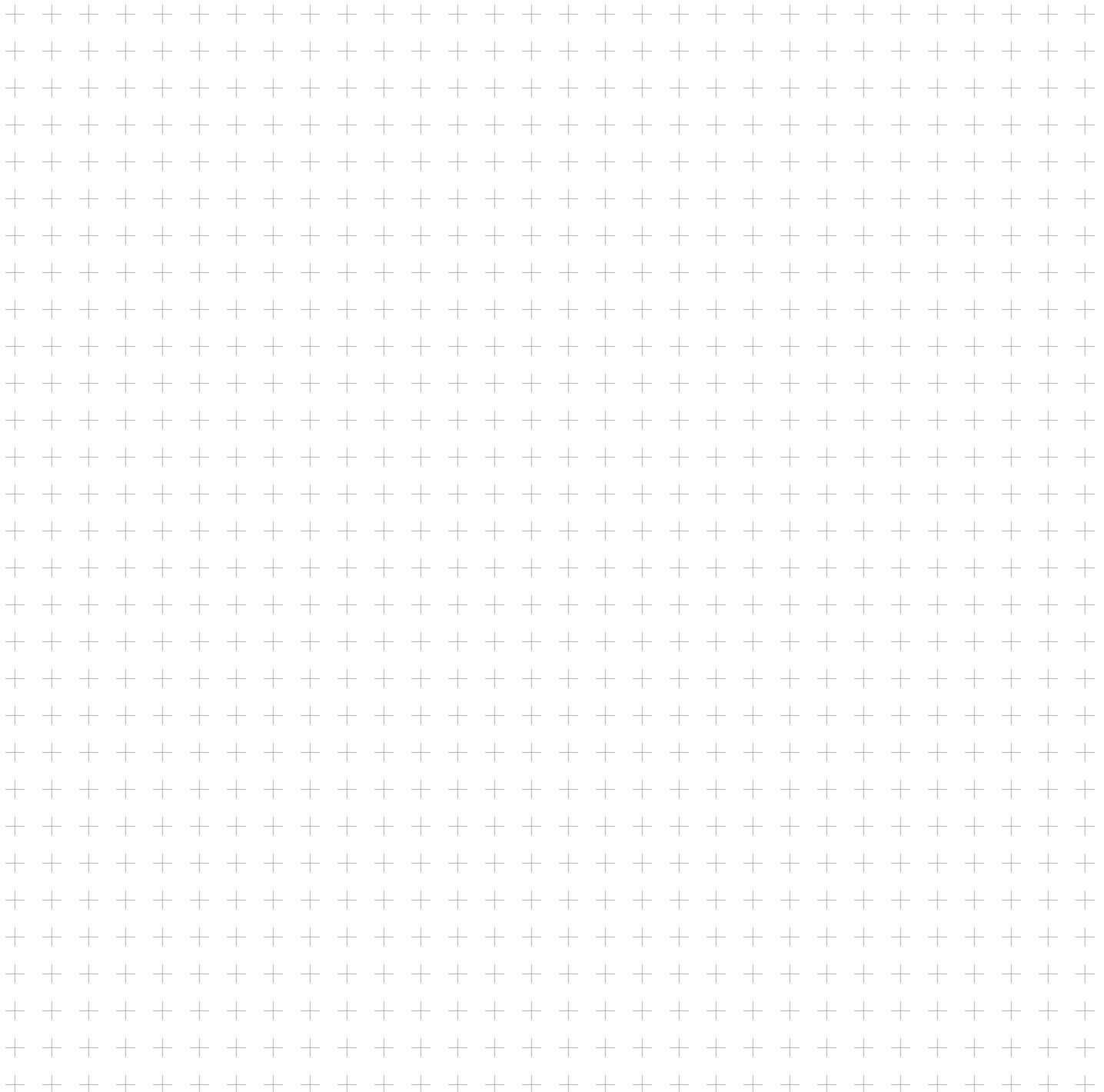
Provide a sketch of your greenhouse(s) so we know where to apply your heat and can accurately determine material quantities. For complex sites please fill out multiple copies of pages 2 & 3.

CHECKLIST

Please sketch your site including:

- Structure footprint
- Structure and area names. Include structure labels from page 3.
- Dimensions of structures and spacing
- Aisles & walkways (locations & sizes)
- Growing surface layout and dimensions (benches, beds, etc.)
- Heat zones
- Boiler / Mechanical room
- Let BioTherm recommend the most efficient & cost effective location.
- Indication of existing and retrofit items
- North Arrow
- Doors
- Utilities

SKETCH

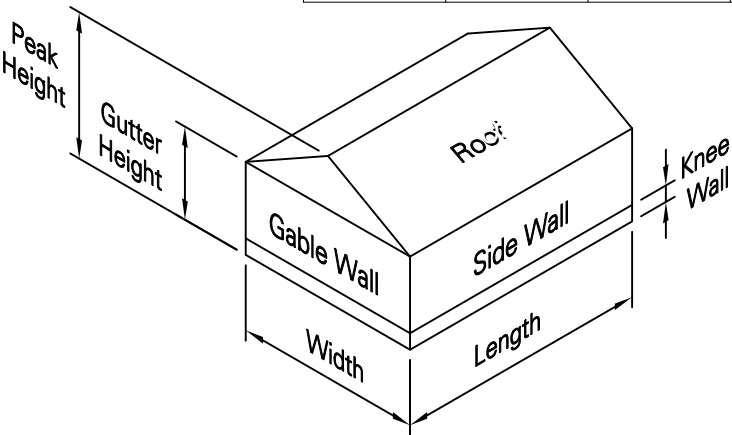


Fill out this page if additional heat is required (see supplemental heat section on page 1).

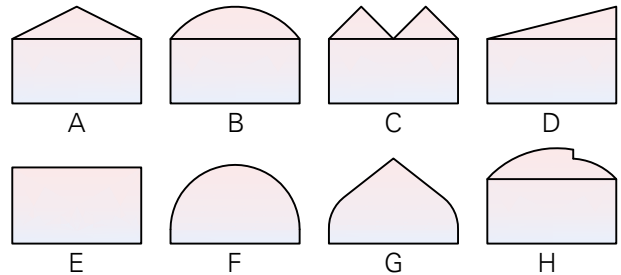
STRUCTURES

Indicate your greenhouse characteristics in the table below.

Structure Label	①	②	③	④	⑤	⑥	⑦	⑧
# of Ranges:								
# of Bays per Range:								
Gutter Height (ft.):								
Knee Wall Height (ft.):								
Bay Width (ft.):								
Bay Length (ft.):								
Peak Height (ft.):								
Structure Type*:								



*Structure types:



GLAZINGS & COVERINGS

Using the list below, indicate glazings/coverings in the following table.

Structure Label	①	②	③	④	⑤	⑥	⑦	⑧
Side Wall A:								
Side Wall B:								
Gable Wall A:								
Gable Wall B:								
Roof:								
Knee Wall:								

Glazing/Covering List:

- | | | |
|------------------------------|-------------------------------------|-------------------------------|
| 1. Polyethylene Film, Single | 7. Polycarbonate Sheet, Triple Wall | 13. Concrete, 8" |
| 2. Polyethylene Film, Double | 8. Polycarbonate Sheet, Corrugated | 14. Concrete, Block |
| 3. Acrylic Film, Double | 9. Fiberglass | 15. Wood |
| 4. Polycarbonate Sheet, 16mm | 10. Glass, Sealed | 16. Metal |
| 5. Polycarbonate Sheet, 8mm | 11. Glass, Lap | 17. Insulated (R-Value _____) |
| 6. Polycarbonate Sheet, 6mm | 12. Concrete, 4" | 18. Other: _____ |

FEATURES

- | | | |
|--|--|---|
| <p>Curtains:</p> <p><input type="checkbox"/> Shade</p> <p><input type="checkbox"/> Blackout</p> <p><input type="checkbox"/> Heat Retention</p> | <p>Other:</p> <p><input type="checkbox"/> Below Grade Insulation (R-Value _____)</p> <p><input type="checkbox"/> Retractable Roof</p> <p><input type="checkbox"/> Other: _____</p> | <p><input type="checkbox"/> Roll-up Sidewalls</p> <p><input type="checkbox"/> Pad/Fan System</p> <p><input type="checkbox"/> Unit Heaters (Size: _____ BTU/h)</p> |
|--|--|---|