# Greenhouse Planning Guide

A step-by-step guide to help you make the most important decisions before building your custom greenhouse.

Everything you need to consider, from size and structure to glazing, heating, and design details, so you can request a quote with confidence.

ARCADIA
GLASSHOUSE

# 1 Should Your Greenhouse Be Attached or Freestanding?

The design of your greenhouse will influence everything from energy efficiency and accessibility to zoning rules and cost. This choice lays the groundwork for how the greenhouse will connect with your home and support your long-term growing goals.

## Attached Greenhouses

- Save energy by utilizing your home's walls for insulation.
- Easier and more cost-effective to connect electricity, water, or other utilities
- Easy indoor access makes year-round gardening more practical in cold or wet weather.
- Custom architectural features can make the structure blend seamlessly with your home's style
- Require frost-free foundations and typically adhere to stricter building codes.

## Freestanding Greenhouses

- Maximize sunlight exposure as sunlight enters from all four sides.
- Offers greater flexibility in size, layout, and positioning.
- Perfect for highlighting your greenhouse within a landscaped area.
- May require a bit more heating during winter due to their full exposure.

***Let us help you decide:*** We'll guide you through your site options and structural needs during the custom quote process.

# 2 Choose the Best Location for Light, Access, and Performance

Greenhouse placement is about more than finding a sunny spot. It's about creating the right balance of sunlight, shelter, and usability. Orientation affects plant growth, energy use, and your overall experience.

## Location Tips

### NORTH

***Northern exposure is the least favorable***
Limited light makes it challenging to grow sun-loving or tropical plants, although it can be suitable for shade-tolerant varieties.

### WEST

***West-facing is ideal***
Afternoon sun provides steady warmth, especially helpful in cooler months.

### EAST

***East-facing is also a good option***
Morning light gently warms the space, helping to regulate the temperature early in the day.

### SOUTH

***Southern exposures can be too intense***
While it provides full sun, summer heat may stress plants without proper shading.

## Lighting Tips

***Add supplemental lighting if needed***
Greenhouses are designed to create the ultimate growing environment. If your site doesn't receive ideal sunlight throughout the day, supplemental grow lights can easily be added to ensure consistent, healthy growth.

***Use modern glazing to control light***
Today's glass and polycarbonate options can reduce glare, block UV rays, or diffuse sunlight, providing you with more flexibility, even in bright locations.

***Create light zones inside***
Design your interior to include both sunny and shaded areas, accommodating the diverse needs of different plants. For example, place tropicals in the brightest spots and leafy greens or seedlings in partial shade.

# 3 Prioritize Structural Integrity

Your greenhouse should be both durable and attractive. The strength of the structure you choose will impact its performance over time, particularly in terms of snow loads and wind resistance. Aesthetics also play an important role in your selection. Whether you prefer a sleek, modern design or a traditional greenhouse style, Arcadia GlassHouse offers options that are both functional and visually appealing.

## Frame Construction Matters

- Our single-pane systems use square tube aluminum frames with welded trusses, considered the gold standard for strength.
- Our double- and triple-pane systems are built with thermally broken frames for superior insulation.
- Our greenhouses can be engineered to meet virtually any regional snow or wind load requirements.

*Welded Truss Engineering*

## Choose Your Eave Style

- Straight eaves offer timeless lines, increased headroom, and better cost-efficiency.
- Curved eaves deliver a softer appearance but may reduce interior space and increase costs.

*Straight Eave*

*Curved Eave*

## Engineered for Longevity

- Full-length single-pane glass or polycarbonate panels minimize gaps and boost insulation.
- H-channel framing systems secure panels more effectively, accommodate expansion and contraction, and simplify maintenance and service.
- EPDM rubber seals enhance weather resistance and energy efficiency with up to a 40 year lifespan.

## 4 Size Your Greenhouse for Comfort and Growing Potential

The right layout provides space to grow without wasting room. Think about what you will use your greenhouse for: propagation, tropicals, food crops, orchids, or year-round enjoyment. Many customers discover that over time their greenhouse becomes more than just a place for plants. Tables, chairs, and even fountains are common additions that can take up considerable space. Your future self will thank you for planning a greenhouse that fits your plants, workflow, lifestyle, and vision.

### Common Greenhouse Widths

**8–10 ft. wide**
Best for single-aisle layouts and small to medium plant collections

**12-14 ft. wide**
Allows for generous side benches and comfortable walkways

**16-18 ft. wide**
Wide enough to include a center aisle for improved accessibility and workflow

**20 ft. wide**
Double-aisle design ideal for large-scale growing or a central display area

***Pro Tip:*** Wider greenhouses increase structural costs due to larger trusses. It's often more cost-effective to increase length instead of width.

# 5 Foundation & Flooring

A solid base is essential for keeping your greenhouse level, sealed, and structurally sound. It also influences factors such as comfort, ease of use, drainage, humidity, and accessibility. Depending on your site and the type of structure, you will choose from options like footers, concrete pads, or wood frames. You may opt for low-maintenance, easy-to-clean floors or natural materials that help increase humidity. The importance of this foundational layer should not be underestimated.

## Foundation Types

- Freestanding greenhouses require a concrete slab, concrete perimeter, or treated wood frame base
- Kneewall greenhouses need a footer, typically 12” wide to 42” deep
- Attached greenhouses call for a deeper frost-free foundation

*Wood Frame Base*

*12” x 12” Surface Footer*

## Kneewalls and Finishes

- Decorative retaining wall block offers a cost effective option
- Brick provides a clean, uniform look and long-lasting durability
- Natural stone facing creates a timeless, high-end appearance that blends with outdoor spaces

*Brick Kneewall*

*Natural Stone Facing*

## Flooring Options

***Concrete:*** Durable, easy to clean, ideal for benches and heavy pots

***Gravel:*** Provides natural drainage and humidity retention

***Brick or pavers:*** Stylish, slip-resistant, and practical

# 6 Choose the Right Glazing: Glass or Polycarbonate

The material you select for your greenhouse walls and roof greatly affects both look and performance. Arcadia GlassHouse offers high-quality glass and polycarbonate systems, each with unique benefits.

## Glass Glazing

***Visual Appeal:*** Provides maximum clarity and brightness for a stunning appearance.

***Durability:*** Long-lasting with modern framing and weather seals.

***Energy Efficiency:*** Single-pane glass is the most affordable option. Double-pane glass offers up to four times greater energy efficiency, and triple-pane glass is also available.

***Heat Management:*** May need shade cloth in direct sunlight.

*7/8" argon-filled double-pane glass*

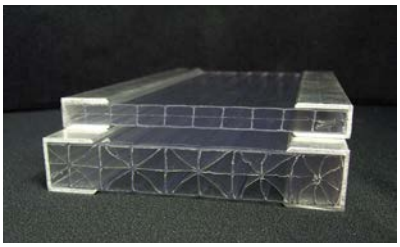
## Polycarbonate Glazing

***Strength:*** Nearly unbreakable and resistant to impact.

***Insulation:*** Comes in 8mm multi-wall and 16mm 5-wall options for better insulation.

***Light Control:*** Tinted or diffuse panels help manage heat and light.

***Longevity:*** Usually lasts fifteen years or more with proper maintenance.



*Cutaway of our 8mm and 16mm polycarbonate glazing*

## Aesthetic vs. Performance

***Glass:*** *Offers a classic look that enhances high-end landscapes.*

***Polycarbonate:*** *Practical and lightweight, making it ideal for working greenhouses.*

# 7 Plan Your Heating System

If you want to use your greenhouse year-round, reliable heating is essential. The right system will depend on your climate, the size of your structure, and your growing goals. Each option has unique advantages for efficiency, comfort, and plant health.

## Electric Heating

- 100% efficient and easy to install
- Perfect for small to mid-sized greenhouses
- Works best in areas with reliable power; consider a backup in outage-prone regions

*Electric Heater*

## Gas Heating (Natural Gas or Propane)

- Effective for larger structures or colder climates
- Available in forced-air or radiant options
- Requires proper venting for safe operation
- Lower operating costs compared to other heating options

*Gas Heater*

## Radiant Floor Heating

- Tubing or electric mats beneath the floor provide even root-zone warmth and improves plant growth
- Higher initial cost but efficient and comfortable for year-round use

## Mini Split Systems

- Provide both heating and cooling in one unit
- Highly energy-efficient with precise temperature control
- Best suited for well-insulated greenhouses or growers who want low-maintenance climate control

## Placement and Zoning

- Install heaters near floor level so warm air rises under benches and around plants
- For larger greenhouses, consider zoning, separating areas by crop type or usage so each section can be heated to its specific needs

***Pro Tip:*** When selecting a system, calculate the BTUs required based on your greenhouse size, glazing type, and lowest expected winter temperatures.Our team can determine the BTU output required to maintain your target temperature.

# 8 Plan an Effective Ventilation System

Ventilation is one of the most vital yet often overlooked aspects of greenhouse design. Proper airflow helps keep plants healthy, prevents overheating, and maintains consistent temperature and humidity levels throughout the space. Depending on your climate and structure, a combination of active and passive systems may provide the best results.

## Shutter Fan and Vent Systems

- Installed at the gable peaks for strong flow-through ventilation
- Thermostatically controlled to activate automatically when temperatures rise
- Can lower interior temperatures by 10°F or more and fully exchange air in under two minutes

## Circulating Fans

- Constantly move air inside the greenhouse
- Prevent stagnant air, reduce mold risk, and help strengthen plant stems
- Essential for even distribution of heat and humidity

*Shutter fan and circulating fans work together to quickly exchange air and maintain even temperatures*

## Ridge Vents, Side Vents and Windows

- Ridge vents release hot air while side vents and operable windows draw in cooler air
- Together they create a natural convection current that reduces the workload on powered systems
- Require occasional maintenance but offer energy-efficient, consistent airflow

*Ridge vents, side vents and windows create natural, efficient airflow for consistent temperatures*

# 9 Plan Your Equipment and Automation

The right accessories and automation make your greenhouse easier to manage, more energy-efficient, and better suited to your plants' needs. From lighting to climate control, each feature should align with your growing goals.

## Lighting

- High-output fluorescent or LED systems provide essential light for seedlings and off-season crops
- Fixtures designed for greenhouse use resist corrosion and perform well in humid environments

## Humidification

- Fine-mist humidifiers introduce moisture evenly without saturating foliage or creating puddles
- Humidity controllers automate the process to maintain optimal levels for plant health

*Integrated shade, irrigation, and lighting systems.*

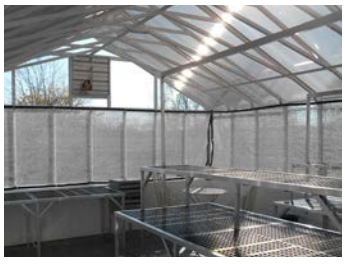
## Watering Systems

- Drip irrigation or micro-tube systems deliver consistent moisture directly to the root zone
- Timers and moisture sensors can reduce water waste and labor

## Cooling Systems

- Shade cloth reduces solar gain and prevents heat stress
- Evaporative cooling units lower interior temperatures on hot days

*External Evaporative Coolers*



*Aluminet Shade Cloth*

*Sheerweave Shade Cloth*

# 10 Add Architectural Enhancements

Design details ensure your greenhouse feels like a natural extension of your property. The right enhancements can elevate a standard structure into a statement piece that reflects your style and integrates beautifully with your surroundings.

## Finish and Color Options

- Powder-coated frames can be customized to complement or contrast with your home's exterior
- Darker finishes can create a bold, modern look, while lighter tones blend softly into garden settings

## Roof Pitch and Entry Style

- Adjust roof slope for architectural harmony or to optimize snow shedding in cold climates
- Add a reverse gable or decorative entryway to create a focal point and enhance curb appeal

## Cresting and Finials

- Decorative cresting and finials add a timeless Victorian touch, enhancing the roofline and overall character of the greenhouse.

## Landscaping and Hardscaping

- Surround with stone paths, raised beds, or patio areas to create an inviting outdoor room
- Incorporate planting beds, trellises, or water features to tie the greenhouse into your overall garden design

# Questions to Ask Before You Build Your Greenhouse

- Will I use this greenhouse daily, year-round, or only during certain seasons?
- Is there a location on my property that offers the right balance of sunlight and accessibility?
- At what times of day does my preferred site receive the most direct sunlight?
- Do I need a structure engineered for high wind or snow conditions?
- How much growing and walking space do I need?
- Do I want flexible bench configurations or a central seating area?
- What type of flooring will provide durability and easy maintenance?
- Do I want a rustic feel or a clean, modern aesthetic?
- Do I prefer the clarity of glass or the rugged utility of polycarbonate?
- Will I be growing light-sensitive plants or year-round crops?
- Is my property equipped for electric or gas connections?
- Does my location experience wide temperature swings or intense summer heat?
- Which systems (ventilation, heating, cooling, lighting, watering) do I want to automate, and which will I manage manually?
- Which accessories are essential for my plants' needs?
- How should my greenhouse look and integrate with my home, garden, and overall landscape design?

Planning your greenhouse is an exciting process, and this guide is designed to help you think through the most important decisions before you build. By considering size, structure, glazing, heating, ventilation, and design details, you'll be ready to create a space that supports your growing goals for years to come.

**Ready to take the next step?** Contact Arcadia GlassHouse to discuss your project and request a custom quote. Our team will guide you through every detail so your greenhouse is designed and built with confidence.

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