

# Residential HVAC Design & Diversity Capacity Deployment System or the Full Airflow Zone System (FAZS™)

Donald Prather

Owner

Full Airflow Zone System LLC

Web: [FAZSControl.com](http://FAZSControl.com)

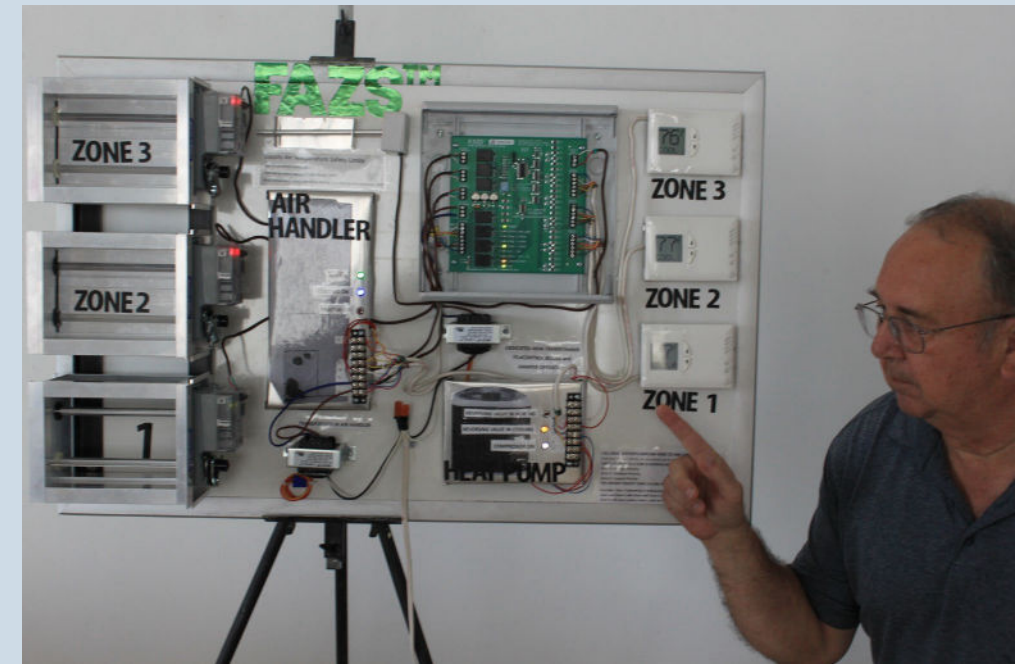
Phone: 888-742-3061

**FULL AIRFLOW  
ZONE SYSTEM**

# FAZS™ Concept In Two Sentences

FAZS™ is three zone control board that opens one zone at a time based on priority.

Provides a simple solution that meets the design requirements for multi-story, low load, and net zero homes using basic builder grade forced air HVAC equipment.



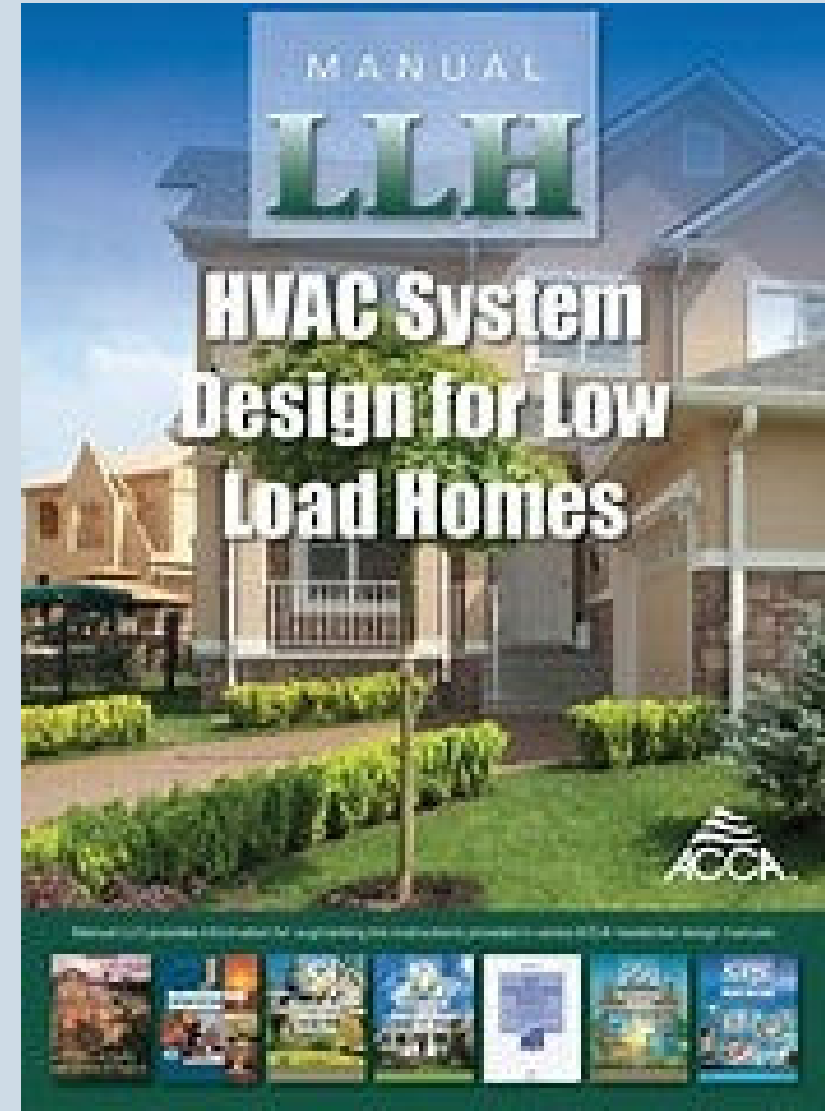
# Capacity Deployment System

## *ACCA Manual LLH HVAC System Design for Low Load Homes*

Provides a single method for using  
standard forced air HVAC equipment:

Section 14-Example 4

“The capacity deployment system  
Concept was conceived and defined by  
Don Prather, ACCA Technical  
Services.”



# Capacity Deployment System AKA Full Airflow Zone System (FAZS™)

The Full Airflow Zone System control board is the only zone control that is designed to meet the control requirements specified for a capacity deployment system.

Built for use in ENERGY STAR, LLH, and net zero homes.

**FULL AIRFLOW  
ZONE SYSTEM**

# FAZS™ Built to Solve Comfort Issues

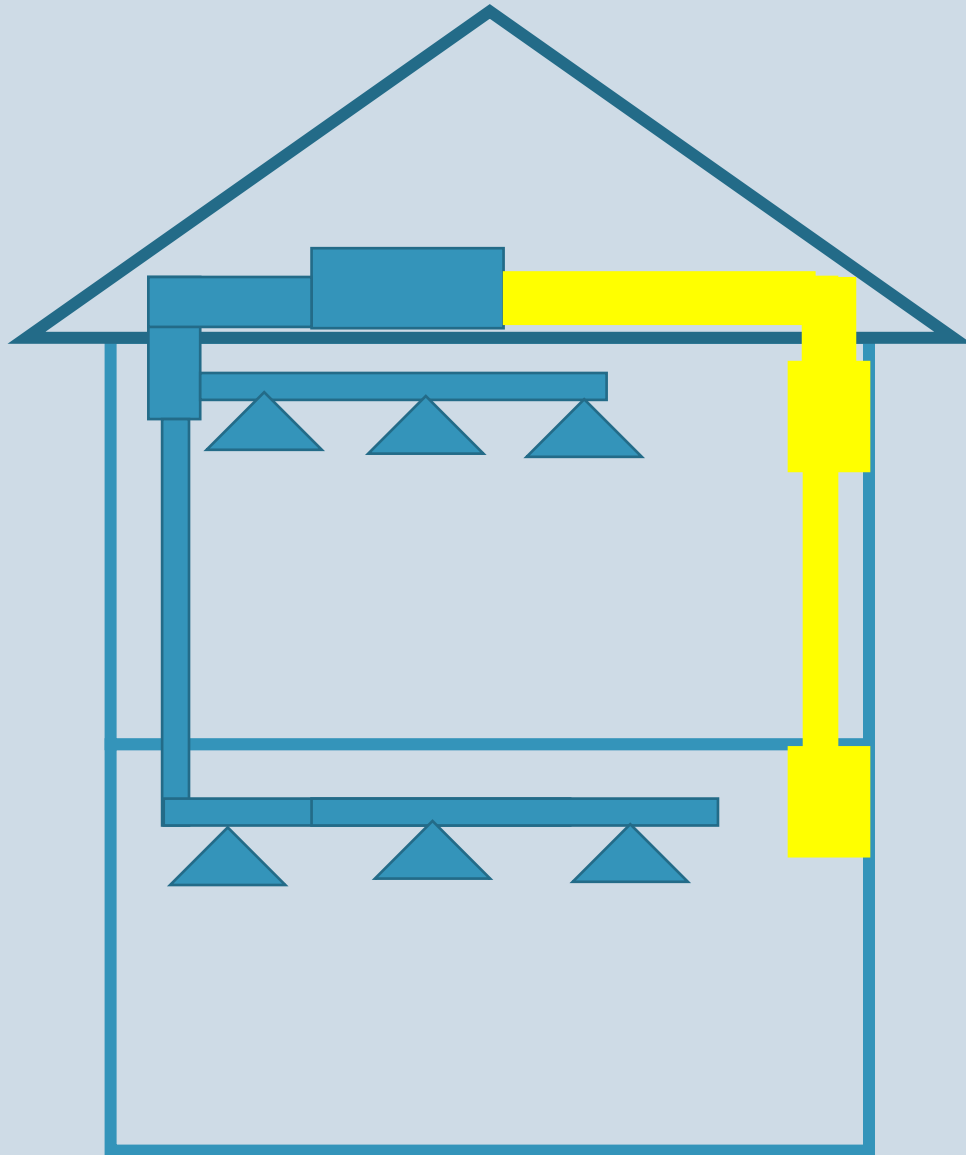
FAZS™ turns basic HVAC equipment into a zone system able to satisfy variable internal heating and cooling demands. It also allows them to heat/cool zones faster than any other HVAC system can.

Time of day related hot and cold spots are eliminated.

Switching damper winter-summer positions for two and three story homes is not required since all of the airflow goes to the floor that is calling for a temperature change.

Grandma's walk out basement in-law suite can be set for heat when the rest of the house is in cooling mode.

# Typical Single Zone New Home HVAC System



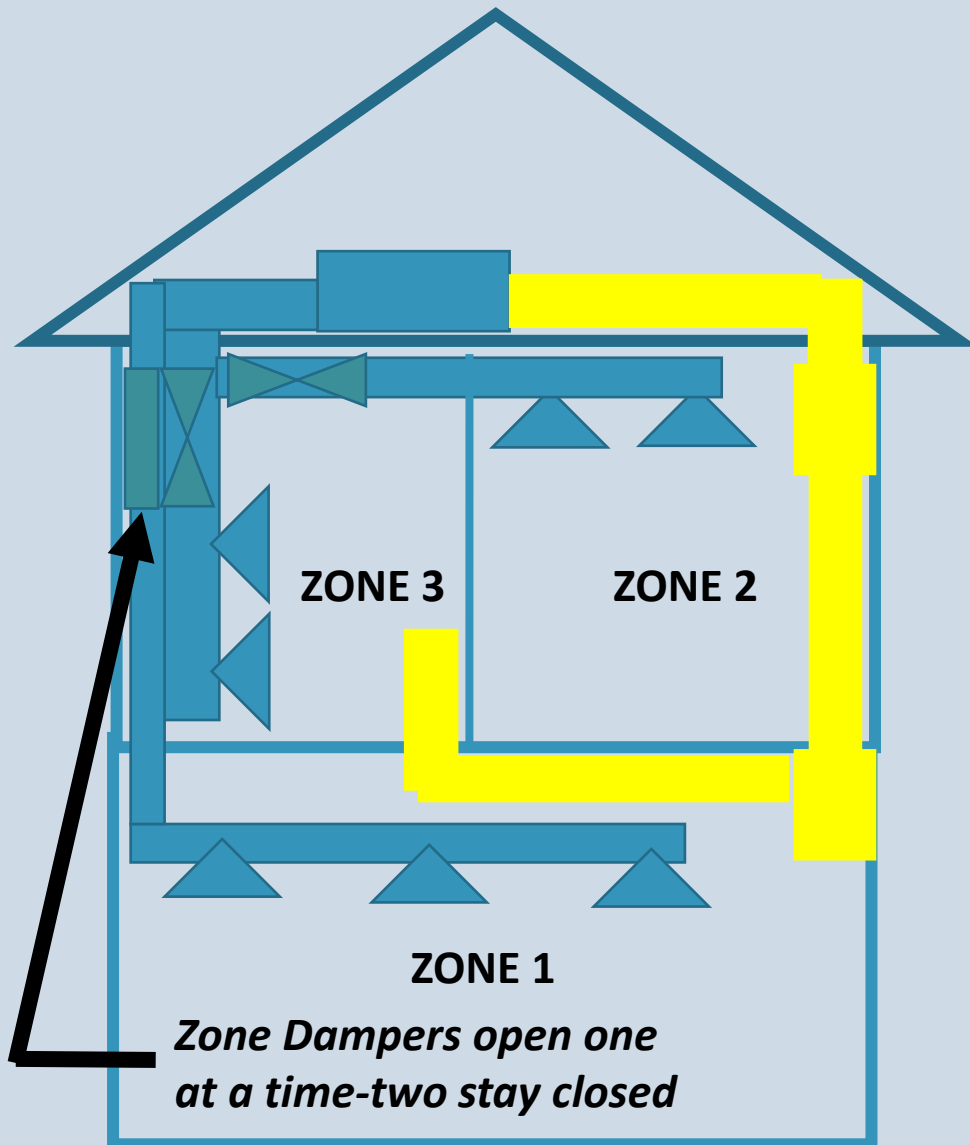
## Traditional issues with temperature control:

- Uneven heating and cooling hot and cold spots and drafts.
- One zone for whole house one thermostat on first floor.
- Duct sizing based on airflow to outlets.
- Duct sizing based on home location in development.
- Typically one return per floor or a single return in a central hall.
- Airflow through diffusers the same for winter and summer.
- Airflow designed based on either heating or cooling by largest value.
- Based on above: System's maximum airflow less than the duct design value.
- Kitchen designed to run extra warm in winter.
- Upstairs will tend to run warmer in the summer.
- Downstairs will tend to run cooler in the winter.
- Whole home must run in one mode: cool or heat.

# Enjoy a comfortable New Home With FAZS™ 3 Zone HVAC equipment

HVAC comfort issues solved by FAZS™ Control and duct design:

- Even heating and cooling based on zone design.
- Three zones with thermostatic control increases comfort control.
- Duct sizing based on full airflow to each zone.
- Duct sizing not dependent on home orientation.
- Return air path from each room with a supply diffuser.
- Airflow works for winter and summer applications.
- Airflow designed based on full airflow exceeds all heating or cooling requirements for the zone calling.
- System's maximum airflow = duct design value.
- Kitchen designed issues solved by zoning scheme.
- Upstairs will operate at set temperatures year round.
- Downstairs will operate at set temperatures year round.
- Zones operate independently in cooling or heating.
- Zones are supplied by more than design airflow to heat and cool zones quickly and satisfy variable heating and cooling requirements thus, saving energy.



# Definition for the Residential HVAC Diversity Factor

The ratio of the sum of the individual maximum (heating or cooling) demand for the various rooms in the home to the maximum demand for the whole home.

OR

Not all areas need heating and cooling at the same time and they could need more or less than the designed amount of heating or cooling airflow to maintain the set temperature.



# FAZS™ Designed to Take Advantage of Diversity

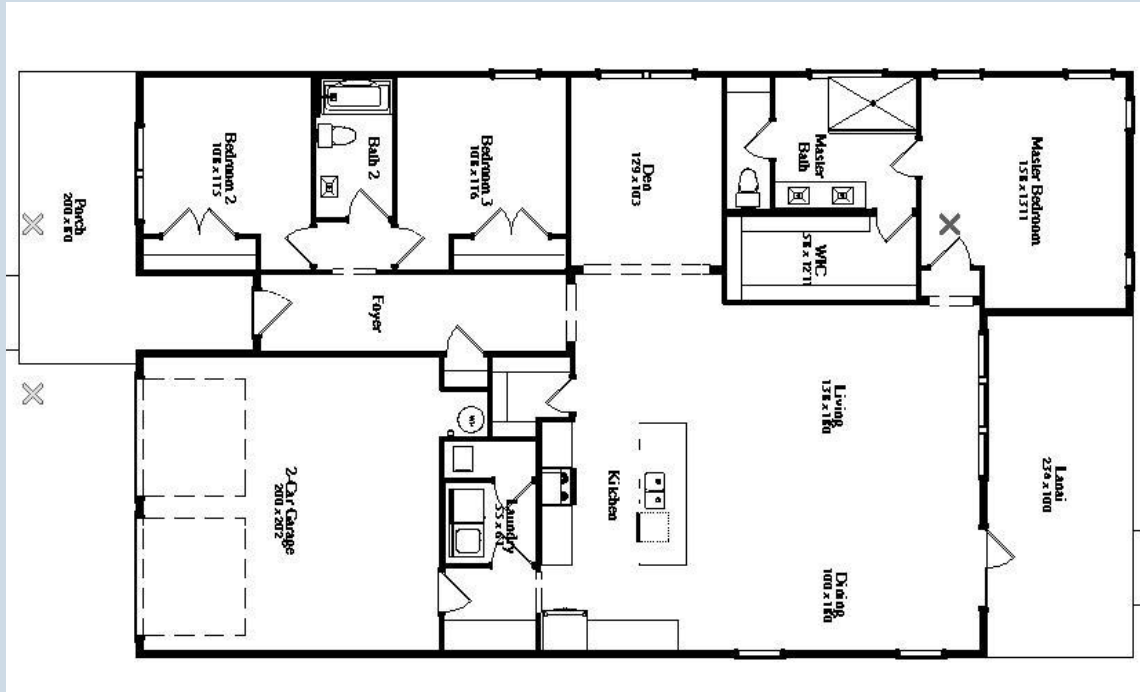
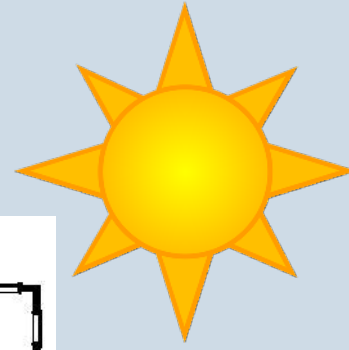
For customers concerned with a healthy environment, who want outside air added: manually stopping the dampers at a minimum position in the FAZS™ controlled system provides air circulation to the zones not calling.

Most homeowners would like thermostatic control in the master bedroom.

Great rooms and open concept home areas benefit by having the ability to cool down even when the internal load exceeds the design amount.

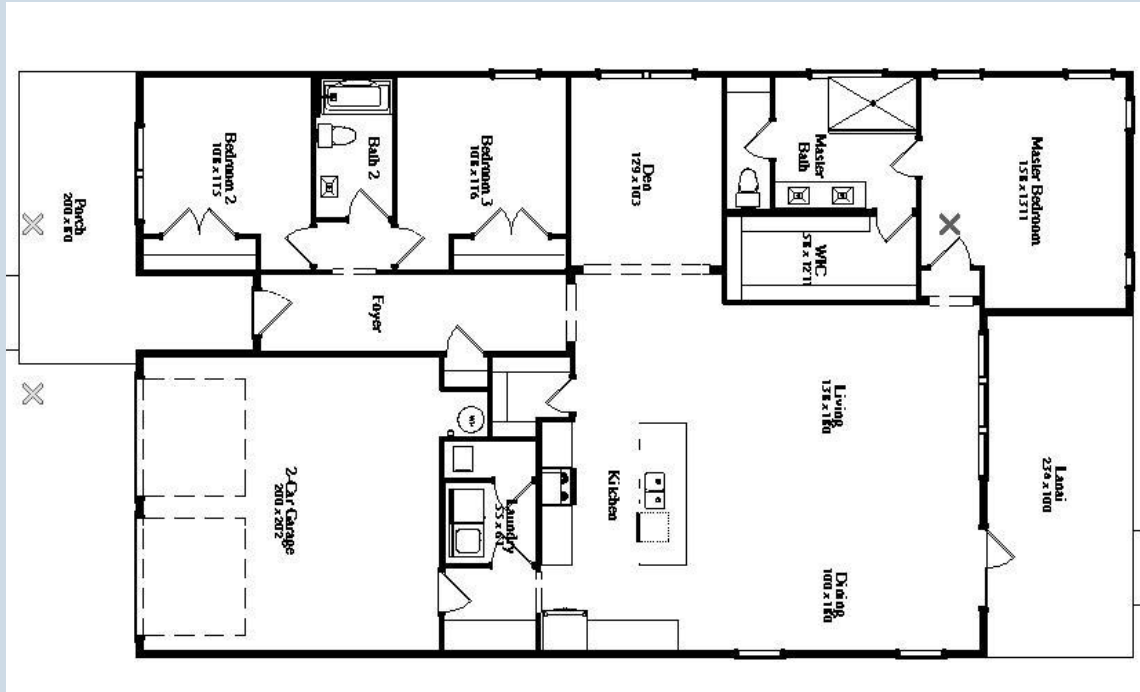
The old bonus room over the garage can now become comfortable using the standard HVAC equipment in the home.

# Manual J8 Load Calculation Summary Report



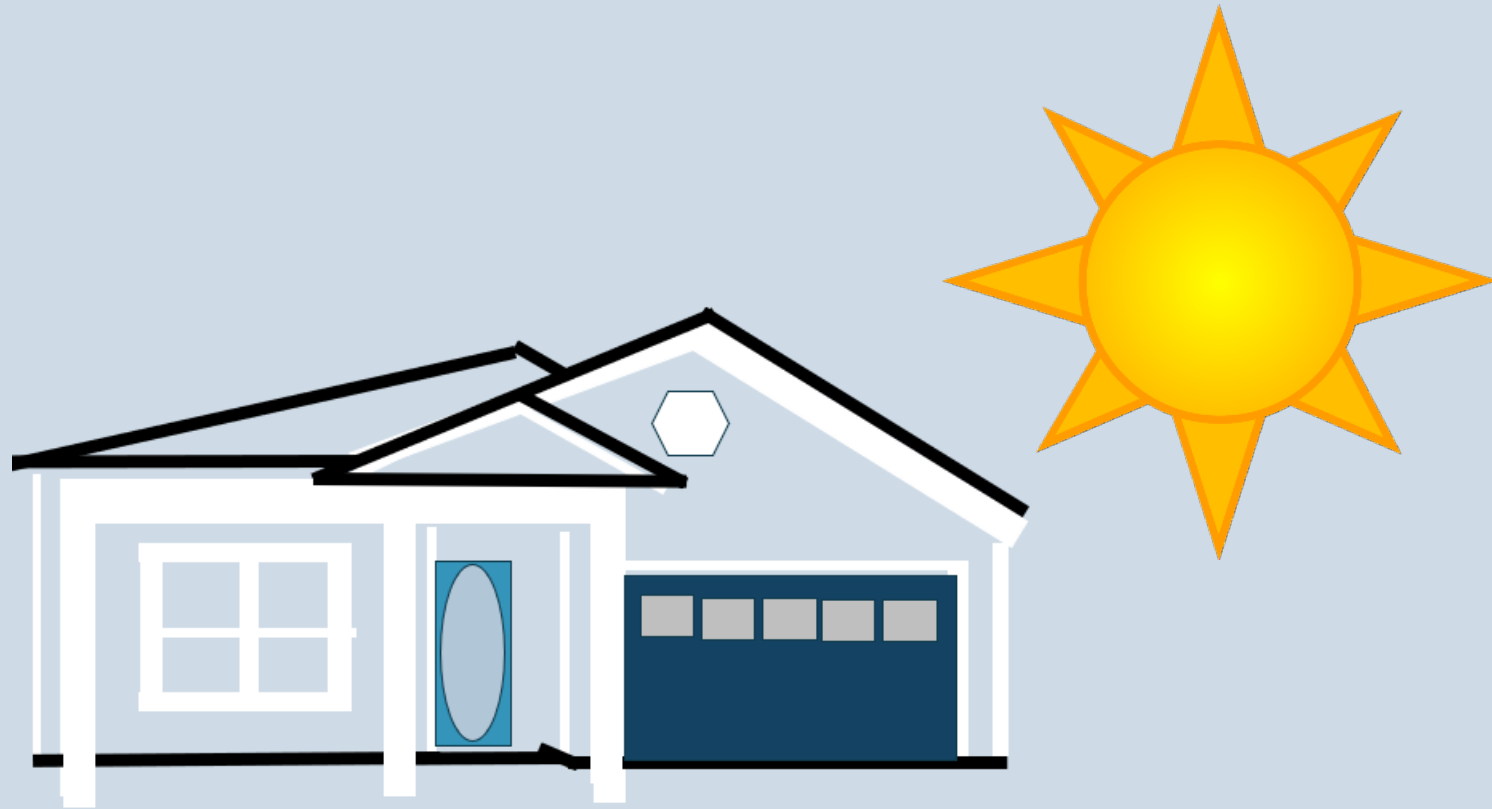
Cooling load is a snap shot taken on a hot afternoon with the sun in the west.

# Manual J8 Load Calculation Summary Report



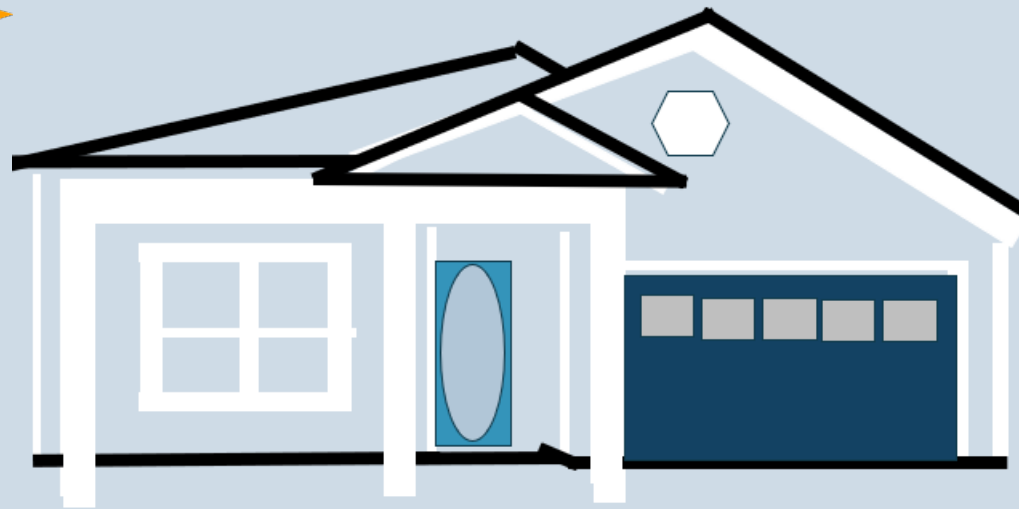
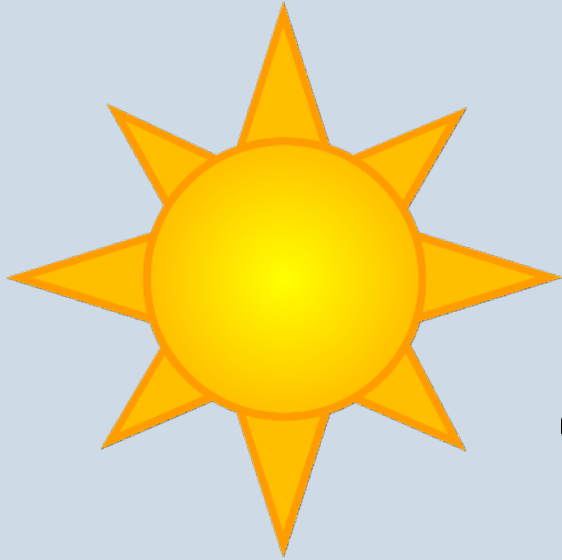
Heating load is a snap shot taken on a cold night.

# Morning Sun Position



Morning east side gets sun and needs cooling west side OK

# Evening Sun Position



Evening west side gets sun and needs cooling east side OK

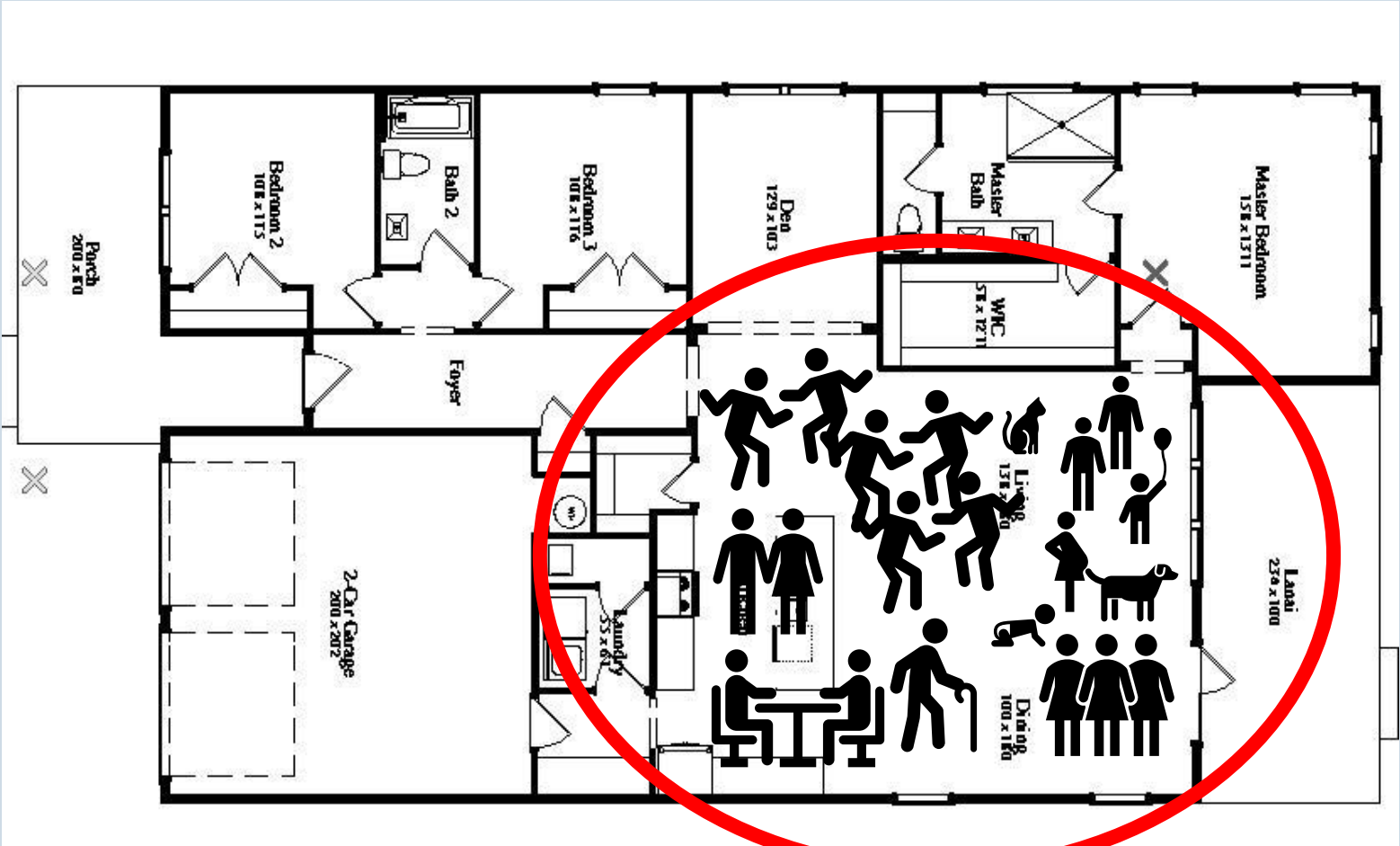
# North vs South Winter vs Summer



North side needs more heat in winter.

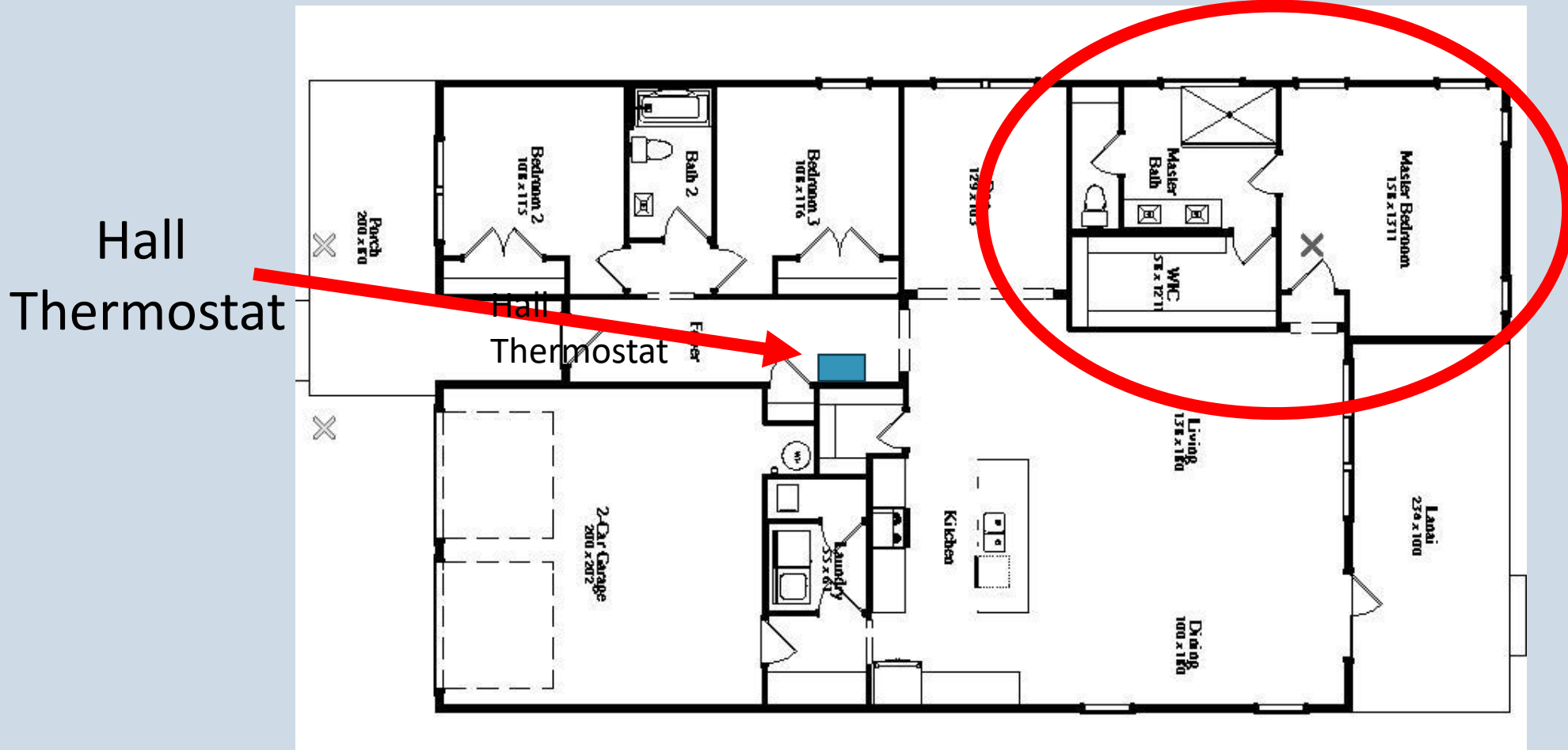
South side needs more cooling in the summer.

# Internal Loads Vary With Usage and Time of Day



South side party needs extra cooling capacity in the summer.

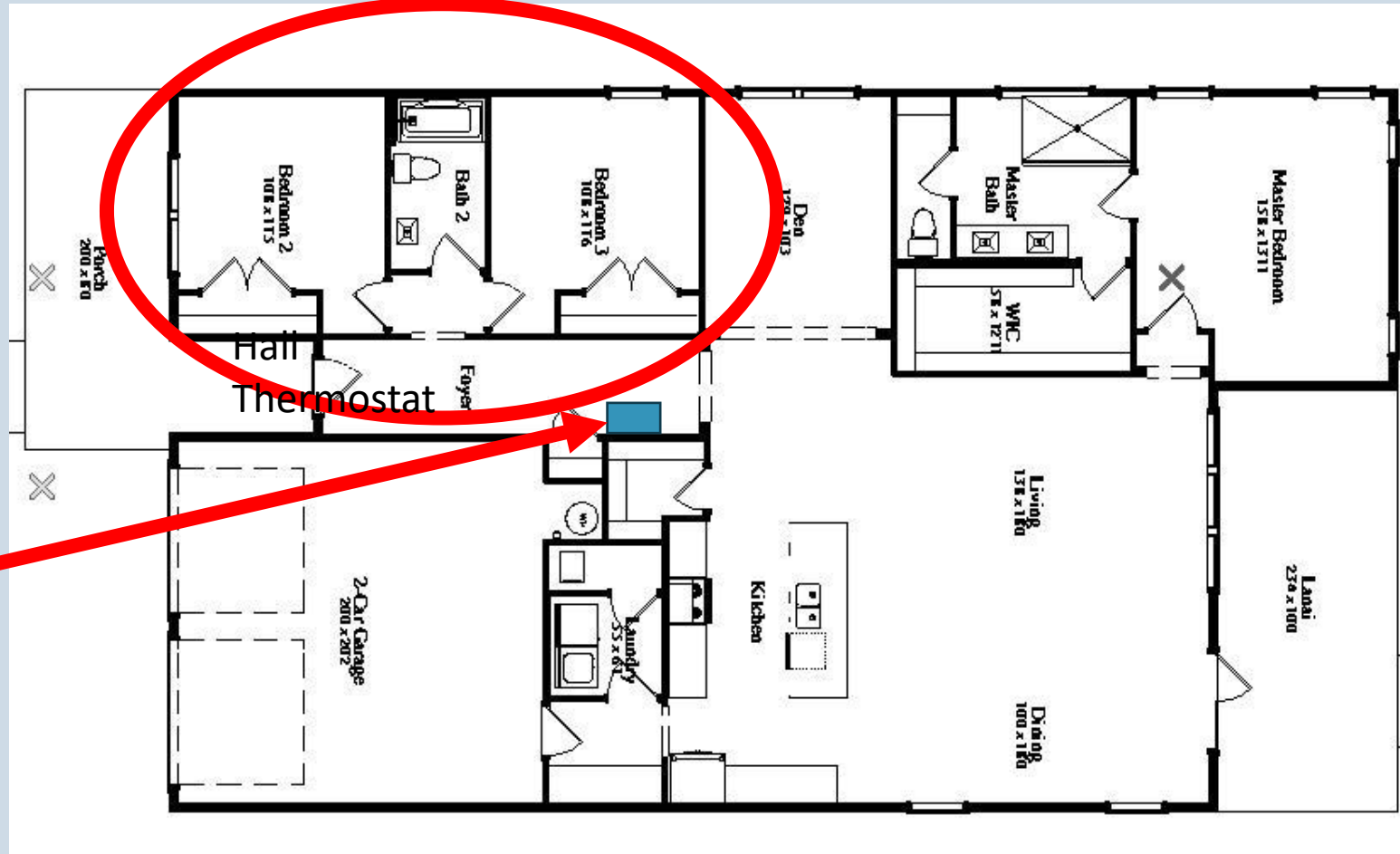
# Master Bedroom South-East Side Summer Mornings



Sun comes up and it gets warm! Thermostat in the hall satisfied



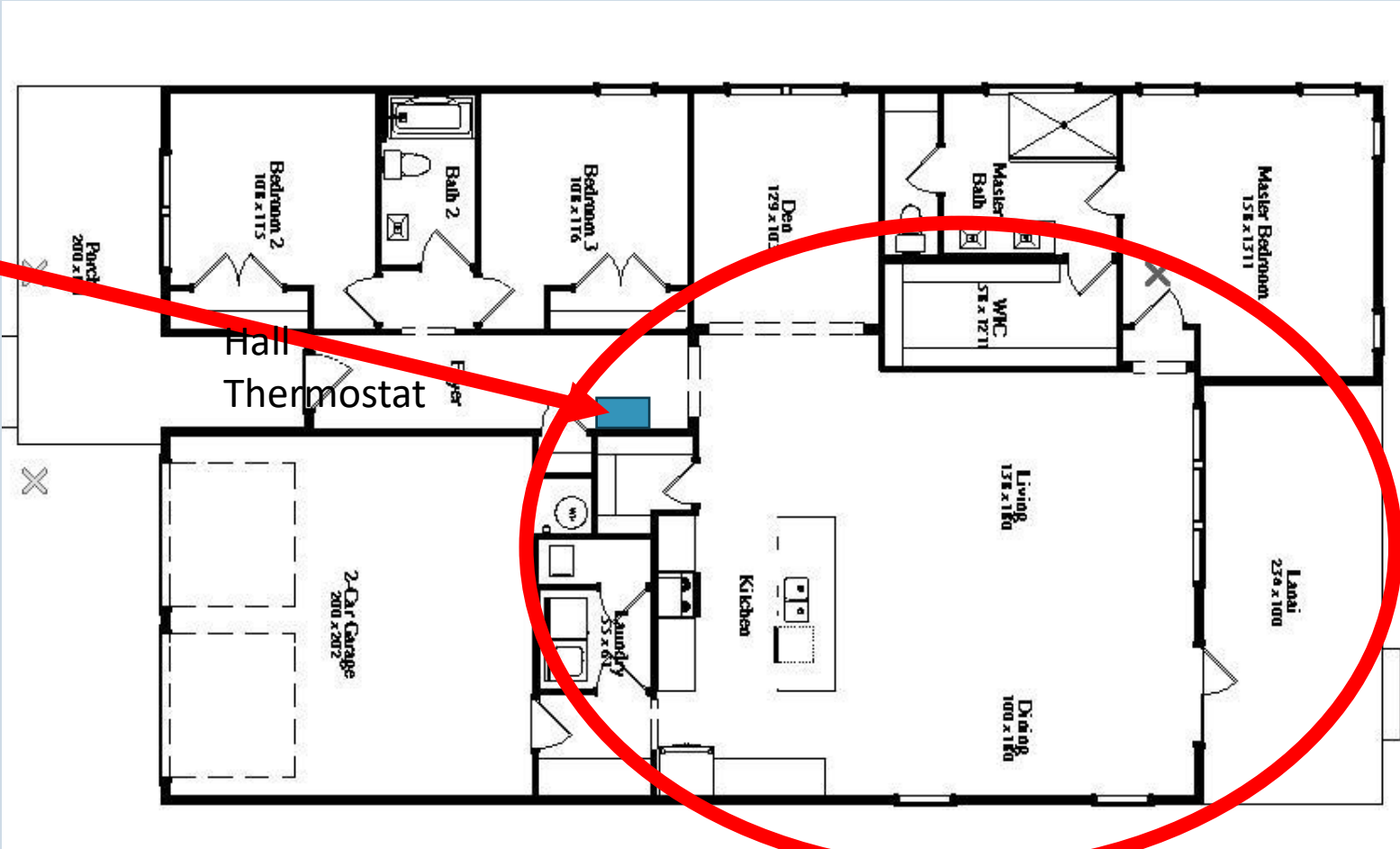
# Bedrooms 2 & 3 North-East Side Winter Nights



Hall  
Thermostat

Cold night and rooms get cold but, the thermostat in the hall satisfied

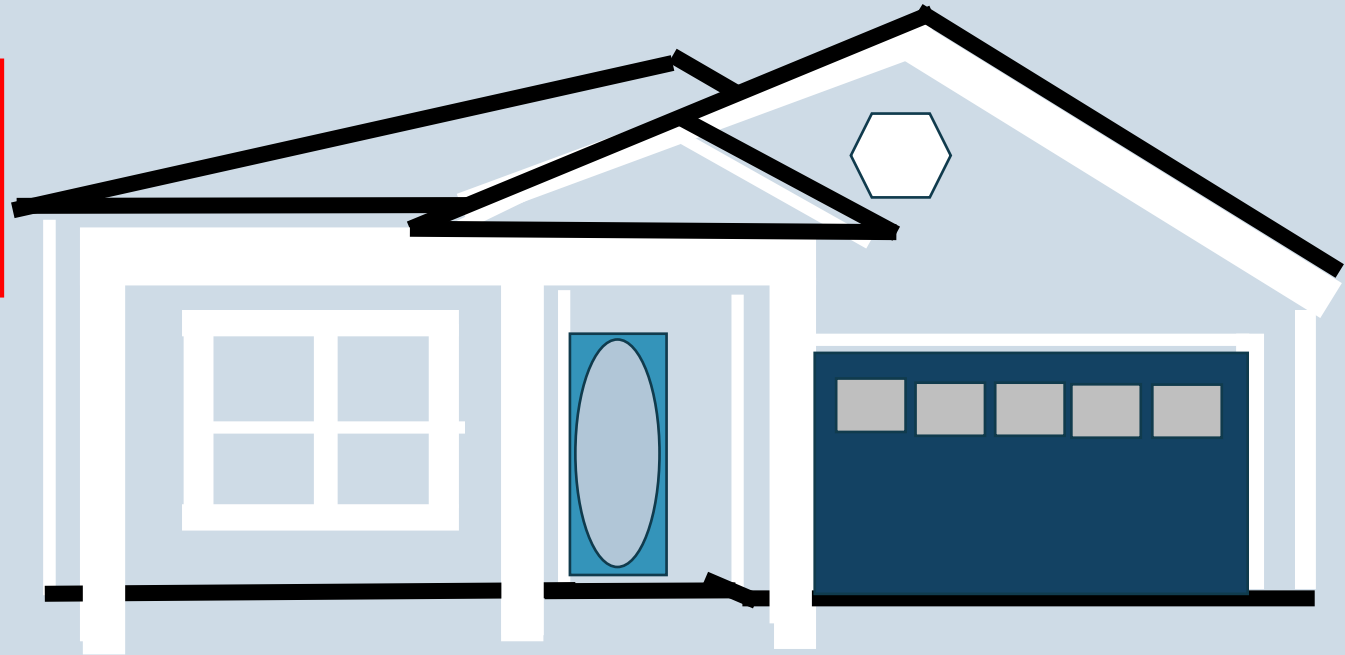
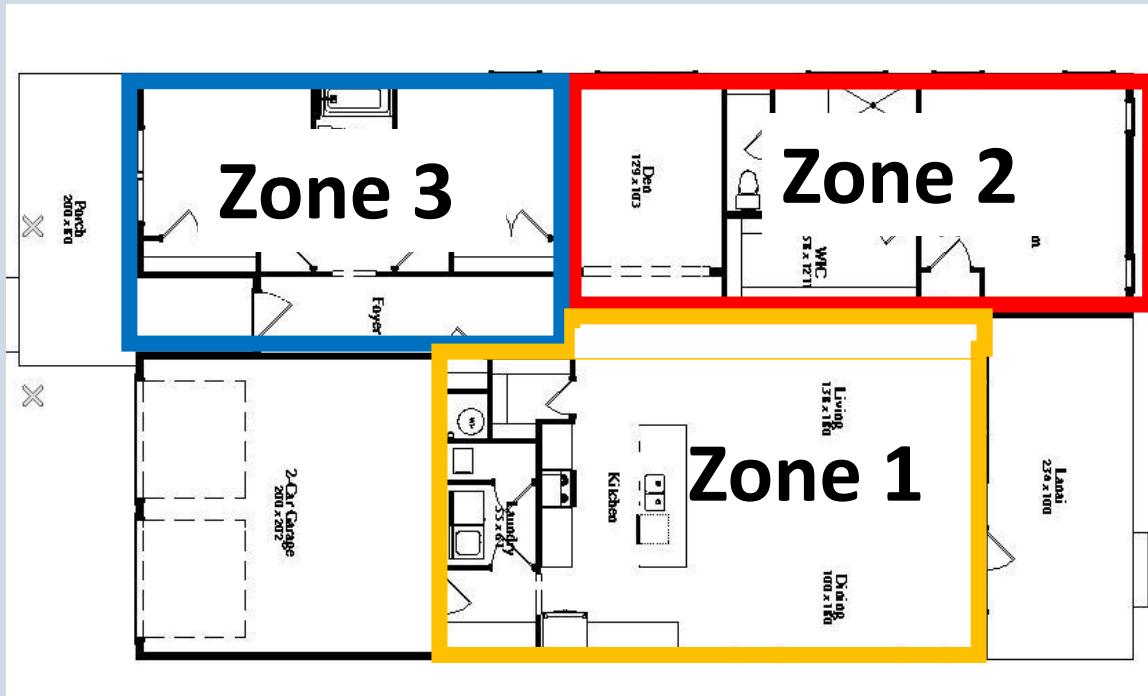
# Great Room Kitchen & Dining South-West Summer



Hall  
Thermostat

Sun coming in and the thermostat in the hall satisfied room heats up!

# Three Zones With a Capacity Deployment System



Three thermostats + three zones + full HVAC system airflow capacity to one zone at a time = comfort control for diversity!

# Full Airflow Zone System (FAZS™)

Make your home more comfortable and save on energy!

*For More information please visit our website:*

*FAZSControl.com*

*Or*

*Call our toll-free number: 888-742-3061*

*Dampers and the FAZS™ control board have a 5 year warranty.*

