Sartell

CITY OF SARTELL
SUBMITTAL CHECK LIST & QUESTIONAIRE FOR NEW HOMES
2015 STATE BUILDING CODE

The City of Sartell must receive the following information to start reviewing your application. Your building permit application will not be accepted until ALL of the items are received and the questions are answered.

_____ Building Permit Application (must include land disturbance information, plumbing and mechanical contractor information, which includes state bond and license information).

_____ Two sets of plans (1 copy of plan drawn to 1/8 or 1/4 inch scale and 1 copy on 11x17 paper).

_____ Two copies of a Certificate of Survey signed by a licensed Land Surveyor. Information shown shall include but is not limited to:

- Lot/Block designation
- Easements-dimensioned and drawn to scale
- Pin number and tax I.D. number
- Building setbacks (all sides) to property lines and adjacent structures
- House, garage and driveway must be identified with elevations & dimensions to corners
- Drainage information (spot elevations, grading slopes (H:V), drainage arrows)
- Sediment and Erosion Control measures (Silt fence, bio rolls, etc.)
- Location of rock entrance (6 inch depth and required length up to 50ft)
- **See Certificate of Survey and Staking requirements sheet for a full list of required information**

_____ One copy of 2015 Energy Code Worksheet (MN. Rules Chapter 1322/2012 IECC).

_____ One copy of the 2015 Mechanical Code Worksheet (combustion air and make-up air worksheets if applicable).

_____ One copy of the 2015 Plumbing Code Worksheet

_____ One copy of the 2015 Additional Features Check List.

Please answer the following questions. In a development where a grading plan has been completed, the curb elevation must be the actual elevation taken at the site and based on benchmark elevations from the development's approved grading plan.

Bench Mark Location:_____ Bench Mark Elevation:_____

Top of curb elevation (at approach & must be obtained at the site): _____

Garage Floor: _____ Driveway Slope (%): _____

Main Floor: _____ Top of Foundation: _____

Low Floor: _____ Top of Footing: _____

Lowest opening:_____ Walk-out: (Y / N) Lookout: (Y / N)

I hereby certify that I have read and examined this submittal checklist and questionnaire and know the same to be true and correct

Name (print)_____ Signature _____Date_____

Once all of the items have been submitted and questions answered, the completed submittal documents can be delivered to Sartell City Hall located at 125 Pinecone Road North. **Do not send any checks or money with the application and submittal documents.** Upon completion and approval of the plans and specifications by the City of Sartell the applicant will be notified that the permit is ready to be picked up and paid for. No work can be commenced or inspections scheduled until the permit has been approved and obtained from the City. **A SITE INSPECTION IS REQUIRED BEFORE ANY EXCAVATION WORK BEGINS.** *Completed applications will expire if they are not picked up at the City within 180 days from the approval date (MN. Rules 1300.0120 subp. 9)*

CITY OF SARTELL

SINGLE-FAMILY RESIDENTIAL

CERTIFICATE OF SURVEY & STAKING REQUIREMENTS

A. New Construction Single-Family Project Certificates of Survey must include the following:
   1. Two 11 x 17 Certificate of Survey copies
   2. Scale of drawing, north arrow, and property legal description, PIN and address
   3. Names of all abutting streets, dimensions of all lot lines, and easements of record
   4. Date of survey completion and Land Surveyor license number and signature
   5. Location of proposed and all existing structures on property including house, garage, driveways, sheds, decks, and locations of curb and gutters
   6. Location of primary structure/house on adjacent properties
   7. If applicable, identification of all floodplain areas and 100-year flood elevations with locations and boundaries of all delineated wetlands, with high water level elevations of all ponds, lakes, or other water areas on property or adjacent to property
   8. Dimensions of existing and proposed house, garage, sheds, driveways, decks
   9. Elevations of lot, lot corners, house, garage, driveway, decks
   10. Elevations of top of garage floor, top of basement floor, and top of block elevation
   11. Elevations of first floor and top of garage floor of primary structures/houses on adjacent properties (vacant adjacent properties shall be labeled as such)
   12. Benchmark locations and elevations
   13. Building setbacks (front, rear, and all sides) to all property lines and adjacent structures of all proposed structures
   14. Percent of impervious surface on property
   15. Grade of driveway
   16. Drainage information with spot elevations and drainage arrows
   17. Placement and method of erosion control, including the location of the construction rock entrance
   18. Location of stakes as detailed in Section B, below
   19. Additional information as requested and evaluated by City staff

B. Residential Staking Requirements:
   1. All stakes shall be established by a registered and currently licensed land surveyor and shall be placed at the following locations:
      a. along each side property line at the
         ii. front building line; and,
         iii. rear building line.
      b. near the front of the building excavation indicating the proposed elevation of the top of the building foundation.
      c. On the side yard setback lines if the proposed structure will be located on or within one (1) foot of a side yard setback line.
   2. The maintenance of these stakes, once established by the surveyor, shall be the responsibility of the building permit applicant.
   3. Placement of stakes shall be reviewed by the Building Department as part of the footing inspection.

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CITY OF SARTELL
NEW SINGLE FAMILY DWELLING - 2015 STATE BUILDING CODE
ADDITIONAL FEATURES CHECK LIST

Site Address _____

PLEASE CHECK ALL THE ITEMS THAT APPLY TO YOUR PROJECT

_____ Will the building or portion of the building be used for any licensed child care, adult care, supervised living, hospice, foster care, senior housing, boarding care, housing with services, boarding and lodging, congregate residence or other type licensed facility. Type _____

_____ Automatic fire sprinkler system provided.

_____ Finished lower level (do plans indicate which areas are to be finished).

_____ Exterior deck (plans must be provided and Deck Ledger Attachment Worksheet completed)

_____ Three season or screen porch (plans must be provided)

_____ In-floor heat (Wirsbo)

_____ Wood foundation

_____ I.C.F. foundation: Manufactured specs provided _____ IRC_____

_____ Poured wall foundation Type: Engineered _____ IRC _____ ACI _____
*Engineered and ACI design specs must be provided with application
Height of foundation wall _____ Wall thickness _____

_____ Masonry foundation Type: Engineered _____ IRC _____ ACI _____
*Engineered and ACI design specs must be provided with application
Height of foundation wall _____ Block width _____

_____ Geo-Thermal System: Well Type: Vertical _____ Horizontal _____

_____ Solar Powered Systems

_____ Curb cut needed

_____ Lawn Irrigation System _____ Back flow preventer needed

_____ Water Softener

_____ Swimming Pool: Above ground _____ In-ground _____

_____ Fence

_____ Detached accessory structure (shed): Size _____

_____ _____
Signature Date

Revised 2/18/15

DECK LEDGER ATTACHMENT WORKSHEET

This worksheet is not required for free standing decks.

Decks which are connected to and supported by the existing structure must comply with the connection requirements in IRC R507 or the connection must be designed by a licensed design professional.

IRC R507:

1. Existing Dwelling Floor System Type:
   - Trusses: O.C. spacing _____ Rim material and thickness _____
   - I Joist: O.C. spacing _____ Size _____ Rim material and thickness _____
   - Dimension Lumber: O.C. spacing _____ Size _____ Grade _____ Species _____
2. Ledger Board:
   - Size _____ Grade _____ Species _____
3. Ledger Board Fasteners:
   - Type _____
   - Length _____
   - Placement _____
4. Lateral Load Connection:
   - Type of Connector _____
   - Manufacturer _____
   - Model/Part# _____

ENGINEERED CONNECTION:

1. Name of Licensed Design Professional providing the designed connection:
   _____
2. Is a copy of the construction details drawn by the Design Professional included with the submittal of plans?
   Yes _____ No _____

Signature: _____ Date: _____

Print Name: _____

Revised 2/18/15

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2015 MN Residential Energy Code (MN Rules 1322 and 2012 IECC)
Prescriptive compliance information Sheet for new home construction

*BUILDING ENVELOPE

1. Insulation being installed (dwelling)

	Type	R-Value	NA
Roof/Ceiling			
Wood Framed Walls			
Mass Walls			
Under slab			
Floor/Ceiling			
Bsmt/Crawl Space Walls (walls greater than or equal to 50% below grade)			
• Exterior			
• Interior			
Slab-On-Grade Walls			
Rim			

2. Fenestration

	U-Factor
Windows	
Doors	
Skylight	

*If the attached garage is intended to be conditioned, the building envelope for the garage must comply with the building envelope requirements same as the dwelling.

BUILDING SYSTEMS

1. Heating System

Type	Input Rating	Efficiency (AFUE)	Manufacturer	Model	

3. Cooling System

Type	Output Rating	SEER	Manufacturer	Model	

4. Domestic Water Heater

Type	Capacity in gallons	Manufacturer	Model

5. Ventilation Fan Efficiency:

	Type (Box, In-line, HRV, ERV)	Location	Minimum Efficiency (CFM/Watt)	Rating (CFM)
Ventilation Fan 1				
Ventilation Fan 2				

6. Range Hood:

Manufacturer	Model	Minimum Efficiency	Rating

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ADDITIONAL REQUIREMENTS

Plumbing/Mechanical

1. Provide documentation showing that heating and cooling equipment was sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J.
2. All ducts located outside the building thermal envelope shall be independently insulated to a minimum R-8 and provided with a vapor barrier. Air intake and exhaust ducts within the building envelope must be insulated with R-3.3 and provided with a vapor barrier for a minimum distance of 3 feet from the exterior or unconditioned space. See MN Rules 1322.0403 for additional information and requirements.
3. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.
4. Building framing cavities shall not be used as ducts or plenums.
5. All ducts, air handlers and filter boxes must be sealed with listed and labeled tapes, gaskets, mastics or other approved systems and materials in accordance with MN Rules 1346.603.9.
6. A duct leakage test is required in accordance with IECC R403.2.2 when all ducts or air handlers are not located entirely within the building envelope.
7. Air handlers shall have a manufacturer's designation for an air leakage of no more than 2 percent of the design air flow rate in accordance with ASHRAE 193.
8. Forced air furnaces must be equipped with a programmable thermostat capable of controlling the heating and cooling on a daily schedule to maintain different temperature set points at different times of the day.
9. Heat pumps must be equipped with a two-stage thermostat that controls the back-up heat on its second stage.
10. Mechanical systems piping carrying fluids above 105 deg F or below 55 deg F shall be insulated to a minimum of R-3.
11. The following domestic hot water piping shall be insulated to a minimum of R-3.
    - From the water heater to the kitchen outlets.
    - Outside the conditioned space.
    - From water heater to distribution manifold.
    - Under a slab.
    - Buried piping.
    - Supply and return piping on recirculation systems.
    - 3/8 inch piping with a run length greater than 30 feet
    - 1/2 inch piping with a run length greater than 20 feet.
    - 3/4 inch piping with a run length greater than 10 feet.
    - Piping greater than 3/4 inch with a run length exceeding 5 feet.
12. Circulating hot water systems shall be provided with an automatic or readily accessible manual switch that can turn off the hot-water circulation pump when the system is not in use.

Electrical

1. A minimum of 75% of the lamps in permanently installed lighting fixtures shall be high-efficiency lamps.

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2. Recessed luminaries installed in the building thermal envelope shall be sealed to limit air leakage and shall be IC-rated and labeled as having an air leakage rate not more than 2.0 CFM as tested in accordance with ASTM E 283. A gasket or approved sealant shall be provided between the housing and interior wall or ceiling covering.

Building Envelope

1. Windows, skylights and sliding glass doors shall have an air infiltration rate not exceeding 0.3 CFM per square foot and swinging doors no more than 0.5.
2. A continuous sealed air barrier must be provided in the building envelope, including the separation wall/ceiling between the attached garage and house. Exterior thermal envelope must contain a continuous air barrier.
3. The interior air barrier in any dropped ceiling/soffit shall be aligned with the insulation.
4. Access openings to attics and other unconditioned spaces shall be weather-stripped and insulated.
5. Headers shall be insulated.
6. The connection of sill plate and foundation shall be sealed.
7. Rim joist insulation must include the air barrier.
8. The air barrier must be provided on exterior walls between tubs/showers and within fireplace enclosures.
9. Electrical or communication boxes which penetrate the air barrier must be air sealed boxes.
10. Foundation insulation applied to the exterior foundation walls shall have a weather–resistant protective covering to prevent the degradation of the insulations thermal performance. Such covering must extend a minimum of 6 inches below grade.
11. Attic insulation markers shall be provided at least one in every 300 square feet throughout the attic space and shall face the attic access opening.
12. The insulation installer shall provide a certificate listing the type, manufacturer, initial installed thickness, settled thickness, settled R-Value, installed density, coverage area and number of bags for blown in fiberglass or cellulose insulation. For sprayed polyurethane foam, the installed thickness, area covered and R-Value of installed thickness shall be provided on the certificate.
13. The building shall be tested (Blower Door) and verified as having an air leakage rate not exceeding 3 air changes per hour in accordance with IECC R402.4.1.2. A copy of the report shall be signed by the approved party conducting the test and provided to the Code Official.
14. A compliance certificate shall be completed by the builder or design professional and posted on or in the electrical panel box.
15. All materials, systems and equipment shall be installed in accordance with the manufacturer's installation instructions and the 2015 State Building Code.

I acknowledge that to the best of my ability, all of the information or statements I have provided is true and accurate and that I have read and understand all of the above information provided.

Date _____ Name (Print) _____ Signature _____

2015 MECHANICAL CODE WORKSHEET FOR NEW HOMES

This worksheet along with the make-up air and combustion air worksheets must be completed and submitted with the permit application.

FURNACE 1:

BTU _____ EFF. RATING _____ DIRECT VENTED _____ POWER VENTED _____

FURNACE 2:

BTU _____ EFF. RATING _____ DIRECT VENTED _____ POWER VENTED _____

BOILER:

ELECTRIC: SIZE _____

GAS: BTU _____ EFF. RATING _____ DIRECT VENTED _____ POWER VENTED _____

FIREPLACE

WOOD: MANUFACTURER _____ MODEL#_____ VENTING TYPE _____

GAS: MANUFACTURER _____ MODEL# _____ VENTING TYPE _____

GAS: MANUFACTURER _____ MODEL# _____ VENTING TYPE _____

GARAGE HEATER

ELECTRIC: SIZE _____

GAS: MANUFACTURER _____ MODEL# _____ VENTING TYPE _____

VENTILATION SYSTEM

HRV: MANUFACTURER _____ MODEL# _____ TOTAL CFM _____ CONT. _____

ERV: MANUFACTURER _____ MODEL# _____ TOTAL CFM _____ CONT. _____

Circle one

VENT. FAN: MANUF. _____ MODEL# _____ LOCATION _____ CFM ____ intake/ex.

VENT. FAN: MANUF. _____ MODEL# _____ LOCATION _____ CFM ____ intake/ex.

EXHAUST FANS

BATH/UTILITY FAN: MANUF. _____ MODEL# _____ LOCATION _____ CFM _____

BATH/UTILITY FAN: MANUF. _____ MODEL# _____ LOCATION _____ CFM _____

BATH/UTILITY FAN: MANUF. _____ MODEL# _____ LOCATION _____ CFM _____

RANGE HOOD

MANUFACTURER _____ MODEL# _____ CFM _____

MAKE-UP AIR

PASSIVE _____ LOCATION _____ SIZE _____

POWERED ____ MANUF._____ MODEL# _____ LOCATION _____ CFM _____

_____Make-up air was sized in accordance with Table 501.3.1 of the 2015 state mechanical code CH 1346 and a completed copy has been provided.

COMBUSTION AIR

SIZE (dia.) _____ METAL _____ FLEX _____

_____ Combustion air size was determined in accordance with the 2015 state mechanical code CH 1346 Appendix E, Worksheet E-1 and a copy has been provided.

EQUIPMENT SIZING

_____ Heating and cooling equipment was sized in accordance with ACCA manual S based on building loads calculated in accordance with ACCA manual J and a copy is attached.

_____ Heating and cooling equipment was sized by other approved and accepted methods. Describe:

_____

I acknowledge that to the best of my ability all of the information or statements provided is true and accurate.

Date _____ Name (print) _____ Signature _____

1346.6012 IFGC APPENDIX E, WORKSHEET E-1.

IFGC Appendix E, Worksheet E-1

Residential Combustion Air Calculation Method
(for Furnace, Boiler, and/or Water Heater in the Same Space)

Step 1: Complete vented combution appliace information:

Furnace/Boiler:
____ Draft Hood (Not fan Assisted) ____ Fan Assisted & Power Vent ____ Direct Vent Input: _____Btu/hr

Water Heater:
____ Draft Hood (Not fan Assisted) ____ Fan Assisted & Power Vent ____ Direct Vent Input: _____Btu/hr

Step 2: Calculate the volume of the Combustion Appliance Space (CAS) containing combustion appliances.

The CAS includes all spaces connected to one another by code compliant openings. CAS volume: _____ ft^3

Step 3: Determine air Changes per Hour (ACH)[1]

Default ACH values have been incorporated into Table E-1 for use with Method 4b (KAIR Method). If the year of construction or ACH is not known, use method 4a (Standard Method).

Step 4: Determine Required Volume for Combustion Air.

4a. Standard Method

Total Btu/hr input of all combustion appliances (DO NOT COUNT DIRECT VENT APPLIANCES) Input: _____Btu/hr

Use Standard Method column in Table E-1 to find Total Required Volume (TRV) TRV: _____ ft^3

If CAS Volume (from Step 2) ***is greater than*** TRV then no outdoor openings are needed.

If CAS Volume (from Step 2) ***is less than*** TRV then go to **STEP 5.**

4b. Known Air Infiltration Rate (KAIR) Method

Total Btu/hr input of all fan-assisted and power vent appliances (DO NOT COUNT DIRECT VENT APPLIANCES) Input: _____Btu/hr

Use Fan-Assisted Appliances column in Table E-1 to find Required Volume Fan Assisted (RVFA) RVFA: _____ ft^3

Total Btu/hr input of all non-fan-assisted appliances Input: _____Btu/hr

Use Non-Fan-Assisted Appliances column in Table E-1 to find Required Volume Non-Fan-Assisted (RVNFA) RVNFA: _____ ft^3

Total Required Volume (TRV) = RVFA + RVNFA TRV = _____ + _____ = _____ ft^3

If CAS Volume (from Step 2) ***is greater than*** TRV then no outdoor openings are needed.

If CAS Volume (from Step 2) ***is less than*** TRV then go to **STEP 5.**

Step 5: Calculate the ratio of available interior volume to the total required volume.

Ratio = CAS Volume (from Step 2) ***divided by*** TRV (from Step 4a or Step 4b) Ratio = ___ / ___ = _____

Step 6: Calculate Reduction Factor (RF).

RF = 1 ***minus*** Ratio RF = 1 - _____ = _____

Step 7: Calculate single outdoor opening as if all combustion air is from outside.

Total Btu/hr input of all Combustion Appliances in the same CAS (EXCEPT DIRECT VENT) Input: _____Btu/hr

Combustion Air Opening Area (CAOA):
Total Btu/hr ***divided*** by 3000 Btu/hr per in^2 CAOA = _____ /3000 Btu/hr per in^2 = _____ in^2

Step 8: Calculate Minimum CAOA.

Minimum CAOA = CAOA ***multiplied by*** RF Minimum CAOA = _____ x _____ = _____ in^2

Step 9: Calculate Combustion Air Opening Diameter (CAOD)

CAOD = 1.13 ***multiplied by the square root of*** Minimum CAOA CAOD = 1.13 x $\sqrt{\text{Minimum CAOA}}$ = _____ in

[1]If desired, ACH can be determined using ASHRAE calculation or blower door test. Follow procedures in Section 304.

1346.6014 IFGC APPENDIX E, TABLE E-1.

IFGC Appendix E, Table E-1 Residential Combustion Air Required Volume (Required Interior Volume Based on Input Rating of Appliances)					
Input Rating (Btu/hr)	Standard Method (ft^3)	Known Air Infiltration Rate (KAIR) Method (ft^3)			
		Fan Assisted		Non-Fan-Assisted	
		1994[1] to Present	Pre 1994[2]	1994[1] to Present	Pre 1994[2]
5,000	250	375	188	525	263
10,000	500	750	375	1,050	525
15,000	750	1,125	563	1,575	788
20,000	1,000	1,500	750	2,100	1,050
25,000	1,250	1,875	938	2,625	1,313
30,000	1,500	2,250	1,125	3,150	1,575
35,000	1,750	2,625	1,313	3,675	1,838
40,000	2,000	3,000	1,500	4,200	2,100
45,000	2,250	3,375	1,688	4,725	2,363
50,000	2,500	3,750	1,875	5,250	2,625
55,000	2,750	4,125	2,063	5,775	2,888
60,000	3,000	4,500	2,250	6,300	3,150
65,000	3,250	4,875	2,438	6,825	3,413
70,000	3,500	5,250	2,625	7,350	3,675
75,000	3,750	5,625	2,813	7,875	3,938
80,000	4,000	6,000	3,000	8,400	4,200
85,000	4,250	6,375	3,188	8,925	4,463
90,000	4,500	6,750	3,375	9,450	4,725
95,000	4,750	7,125	3,563	9,975	4,988
100,000	5,000	7,500	3,750	10,500	5,250
105,000	5,250	7,875	3,938	11,025	5,513
110,000	5,500	8,250	4,125	11,550	5,775
115,000	5,750	8,625	4,313	12,075	6,038
120,000	6,000	9,000	4,500	12,600	6,300
125,000	6,250	9,375	4,688	13,125	6,563
130,000	6,500	9,750	4,875	13,650	6,825
135,000	6,750	10,125	5,063	14,175	7,088
140,000	7,000	10,500	5,250	14,700	7,350
145,000	7,250	10,875	5,438	15,225	7,613
150,000	7,500	11,250	5,625	15,750	7,875
155,000	7,750	11,625	5,813	16,275	8,138
160,000	8,000	12,000	6,000	16,800	8,400
165,000	8,250	12,375	6,188	17,325	8,663
170,000	8,500	12,750	6,375	17,850	8,925
175,000	8,750	13,125	6,563	18,375	9,188
180,000	9,000	13,500	6,750	18,900	9,450
185,000	9,250	13,875	6,938	19,425	9,713
190,000	9,500	14,250	7,125	19,950	9,975
195,000	9,750	14,625	7,313	20,475	10,238
200,000	10,000	15,000	7,500	21,000	10,500
205,000	10,250	15,375	7,688	21,525	10,763
210,000	10,500	15,750	7,875	22,050	11,025
215,000	10,750	16,125	8,063	22,575	11,288
220,000	11,000	16,500	8,250	23,100	11,550
225,000	11,250	16,857	8,438	23,625	11,813
230,000	11,500	17,250	8,625	24,150	12,075

[1]The 1994 date refers to dwellings constructed under the 1994 Minnesota Energy Code. The default KAIR used in this section of the table is 0.20 ACH.
[2]This section of the table is to be used for dwellings constructed prior to 1994. The default KAIR used in this section of the table is 0.40 ACH.

Table 501.3.1 Procedure to Determine Makeup Air Quantity for Exhaust Equipment in Dwellings Use the Appropriate Column to Estimate House Infiltration				
	One or multiple power vent or direct vent appliances or no combustion appliances[A]	One or multiple fan-assisted appliances and power vent or direct vent appliances[B]	One atmospherically vented gas or oil appliance or one solid fuel appliance[C]	Multiple atmospherically vented gas or oil appliances or solid fuel appliances[D]
1a) pressure factor (cfm/sf)	0.15	0.09	0.06	0.03
b) conditioned floor area (sf) (including unfinished basements)				
Estimated House Infiltration (cfm): [1a x 1b]				
2. Exhaust Capacity a) continuous exhaust-only ventilation systems (cfm): (not applicable to balanced ventilation systems such as HRV)				
b) clothes dryer	135	135	135	135
c) 80% of largest exhaust rating (cfm): (not applicable if recirculating system or if powered makeup air is electrically interlocked and matched to exhaust)				
d) 80% of next largest exhaust rating (cfm): (not applicable if recirculating system or if powered makeup air is electrically interlocked and matched to exhaust)	not applicable			
Total Exhaust Capacity (cfm): [2a+2b+2c+2d]				
3. Makeup Air Requirement a) Total Exhaust Capacity (from above)				
b) Estimated House Infiltration (from above)				
Makeup Air Quantity (cfm): [3a – 3b] (if value is negative, no makeup air is needed)				
4. For Makeup Air Opening Sizing, refer to Table 501.3.2				

A Use this column if there are other than fan-assisted or atmospherically vented gas or oil appliances or if there are no combustion appliances.

B Use this column if there is one fan-assisted appliance per venting system. Other than atmospherically vented appliances may also be included.

C Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil appliance per venting system or one solid fuel appliance.

D Use this column if there are multiple atmospherically vented gas or oil appliances using a common vent or if there are atmospherically vented gas or oil appliances and solid fuel appliances.

Table 501.3.2
Makeup Air Opening Sizing Table for New and Existing Dwellings

	One or multiple power vent or direct vent appliances or no combustion appliances[A]	One or multiple fan-assisted appliances and power vent or direct vent appliances[B]	One atmospherically vented gas or oil appliance or one solid fuel appliance[C]	Multiple atmospherically vented gas or oil appliances or solid fuel appliances[D]	Passive makeup air opening duct diameter[E,F,G]
Type of opening or system	(cfm)	(cfm)	(cfm)	(cfm)	(inches)
Passive Opening	1-36	1-22	1-15	1-9	3
Passive Opening	37-66	23-41	16-28	10-17	4
Passive Opening	67-109	42-66	29-46	18-28	5
Passive Opening	110-163	67-100	47-69	29-42	6
Passive Opening	164-232	101-143	70-99	43-61	7
Passive Opening	233-317	144-195	100-135	62-83	8
Passive Opening with Motorized Damper	318-419	196-258	136-179	84-110	9
Passive Opening with Motorized Damper	420-539	259-332	180-230	111-142	10
Passive Opening with Motorized Damper	540-679	333-419	231-290	143-179	11
Powered Makeup Air[H]	>679	>419	>290	>179	not applicable

A Use this column if there are other than fan-assisted or atmospherically vented gas or oil appliances or if there are no combustion appliances.

B Use this column if there is one fan-assisted appliance per venting system. Other than atmospherically vented appliances may also be included.

C Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil appliance per venting system or one solid fuel appliance.

D Use this column if there are multiple atmospherically vented gas or oil appliances using a common vent or if there are atmospherically vented gas or oil appliances and solid fuel appliance(s).

E An equivalent length of 100 feet of round smooth metal duct is assumed. Subtract 40 feet for the exterior hood and ten feet for each 90-degree elbow to determine the remaining length of straight duct allowable.

F If flexible duct is used, increase the duct diameter by one inch. Flexible duct shall be stretched with minimal sags.

G Barometric dampers are prohibited in passive makeup air openings when any atmospherically vented appliance is installed.

H Powered makeup air shall be electrically interlocked with the largest exhaust system.