Comment Matrix (Draft Canadian ENERGY STAR Specification for HRVs and ERVs (H/ERVs))

Date	Document
Feb 26 2009	Draft Canadian ENERGY STAR Specification for HRVs and ERVs

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	BP	1	Technical	Watts in the HVI Product Directory is not just fan power. It is power consumption of the whole HRV/ERV unit measured during the test.	The nit picker in me says we should call this HRV/ERV Air Handling Efficacy or don't use the word efficacy and just call it cfm per Watt.	The HRV is using electricity to provide ventilation. Consequently it is appropriate to account for all of the electricity that it consumes. Perhaps the term fan efficacy could be modified if it is creating confusion, although the definition seems clear
	CB	1	Technical	Section 1) H. Standby Power (W) - I would include a standby power maximum level in this draft as standby power is an important component of many E* specifications currently. This may also be the starting process for getting manufacturers to test for standby power consumption.		Data is not yet available. A procedure to measure and report standby power is now included in the CSA C439 Standard. However, there may be some debate on the meaning of standby energy consumption for a device that is intended to operate on a continuous basis. Will likely be considered for Specification 2
	DF	1	Technical	In the "Definitions and References" section, a definition for "Total Heat Recovery Efficiency" (TRE), as per clause 9.3.3.2 of CSA Standard C439 should be added. Ratings of TRE are commonly used to assess the performance of ERVs.	We propose to add this definition along with a criterion for TRE.	Currently there have been no performance requirements for TRE or for operation in cooling mode included in the H/ERV specification.
	CK	10	Technical	Meeting and exceeding the minimum SRE at – 25 deg C. defrost strategy utilizing electric resistance heating is critical to our current technology approach. This strategy, especially given the stepped air flow capabilities of electric resistant heaters, is consistent with Energy Star goals considering the additional duty cycle required to meet minimum ventilation requirements when airflow reduction factors are accounted for in by-pass defrost strategies.		The ineligibility of ENERGY STAR for HRVs with electrical heating parallels the ineligibility of ENERGY STAR for ventilating fans with resistance heating as well as range hood models and ceiling fans with incandescent lighting Electricity is treated by ENERGY STAR as a special form of energy
	DS	10	Technical	Electric resistance heating should not preclude Energy Star Qualification. Electrically heated homes can benefit economically by using HRV/ERV products and the use of electric heat in the HRV/ERV poses no economic or environmental burden. Today virtually every Canadian or US homeowner can purchase "green electricity" with significantly less environmental "footprint" than other fuel types. Specifications against electric heat are no longer justified on the grounds they were in the past.		The ineligibility of ENERGY STAR for HRVs with electrical heating parallels the ineligibility of ENERGY STAR for ventilating fans with resistance heating as well as ineligibility for range hood models and ceiling fans that are capable of using incandescent lighting

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	HVI	10	Technical	ELECTRIC RESISTANCE HEATING: Electric resistance heating should not preclude ENERGY STAR qualification. Electrically heated homes can benefit economically by using HRV/ERV products and the use of electric heat in HRV/ERVs poses no economic or environmental burden. Today, virtually every Canadian or U.S. homeowner can purchase "green electricity" with significantly less environmental "footprint" than other fuel types. Specifications against electric heat are no longer justified on the grounds they were in the past.		The ineligibility of ENERGY STAR for HRVs with electrical heating parallels the ineligibility of ENERGY STAR for ventilating fans with resistance heating as well as range hood models and ceiling fans with incandescent lighting
	RA	10	Technical	Does the elimination of electric resistance heating include small duct heaters? I have a concern if it does since most of the natural gas furnaces that are currently being promoted are two stage or modulating. These furnaces move less air on low fire and therefore will have a lower mixed air temperature (return air and air supplied by HRV) than a single stage furnace during the winter months. In Manitoba, the mixed air temperature on a design winter day can be lower than the minimum inlet air temperature required by the furnace manufacturer. This could void manufacturer warrantees.		If an HRV/ERV includes the electric heaters the answer would be yes. Otherwise, no There is no restriction in the draft specifications that prohibits installing an ENERGY STAR HRV or ERV in an electrically heated home. This is also true for other ENERGY STAR ventilating products. The ineligibility of ENERGY STAR for HRVs with electrical heating parallels the ineligibility of ENERGY STAR for ventilating fans with resistance heating as well as range hood models and ceiling fans with incandescent lighting
	AHRI	3	Technical	The Energy Star requirements should not include a Sensible Recovery Efficiency (SRE) at -25°C in either phase of the program. This operating condition never occurs in the majority of the North American market. The specific test method and metric does not reliably indicate the relative energy efficiency of different models under general winter conditions. In addition, the currently available HRV/ERV unit certifications generally specify the SRE at -25°C at a different airflow from the SRE at 0°C.		Cold weather test requirement verifies that the HRV functions when the outdoor temperature is cold. This is a Canadian specification. The -25 test was developed to ensure that the unit operates during low temperatures and that any required defrost mechanism functions properly – in some ways it is analogous to "abnormal operating condition tests" that are required for heat pump equipment. Net supply flows for which the product qualifies must be specified in literature and labeling (Table 1 and 2) This may require clarification in the final specification or partner agreement. For example, a tolerance of ±10% could be used to correlate the low temperature flow and the 0°C flow and allow a statement that the product is ENERGY STAR qualified at flow X

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	AHRI	3	Technical	As currently proposed, HRV/ERV units could be certified at unrealistically low airflow rates. Even if this rate is specified on the Energy Star label, this is a way to get an Energy Star label for units that will never be operated in the field at the rating point.	The airflow at which the units are rated must be standardized in some way. For example, units could be certified at a specific standard external static pressure, and the speed setting intended for general use.	Manufacturers choose the flows at which they rate their products. The test standard imposes a minimum static pressure for each rating test. Net supply flows for which the product qualifies must be specified in literature and labeling (Table 1 and 2) Linking performance criteria to a specific flow rate and external static pressure would remove choice from the consumer and restrict the design of the units
	AHRI	3	Technical	While it is important to encourage efficient motor/blowers in HRV/ERVs, a fan efficacy metric (CFM/watt) should not be one of the requirements for Energy Star, because overall unit power input is already one of the measured inputs to the Sensible Recovery Efficiency.	We recommend further study of fan efficacy metrics for possible inclusion in a second phase.	Although the thermal impact is accounted for in the SRE and TRE calculations, the power consumption of an HRV increases the electricity consumption and represents an incremental load.
	AP	3	Technical	During the forming years of R-2000 Program in 1984-88, many HRV installations in northern Ontario, Prairies and in the North failed due to core freeze up during winter months. It was that time, HRV testing at -25 C was introduced. There was an HRV replacement program for R2000 Homes. Replacement HRVs were all tested and certified at -25 C, and in all cases, alleviated the core-freeze up problems. Since then, R2000 Standard requires HRVs which meets the -25 C testing requirements.		This is a Canadian specification. The -25 test was developed to ensure that the unit operates during low temperatures and that any required defrost mechanism functions properly – in some ways it is analogous to “abnormal operating condition tests” that are required for heat pump equipment.
	AP	3	Technical	Section 3 - I strongly suggest that the proposal be for a one start date (July 1, 2009) with Table 2 requirements. Skip the step one with Table 1 altogether. This will reduce the market confusion.		Acceleration of the Table 2 requirements could be considered. Fewer units would qualify than for Table 1

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	AW	3	Technical	The “cfm/watt” criterion should be eliminated at least for the time being. It is our understanding that the electrical consumption of an HRV is already included in the SRE and the TRE calculation. More importantly the cfm/watt ratings are not reported on the HVI sheets and this will make it difficult for contractors, builders and consumers to understand. Finally, when you consider the total energy use and savings of an HRV compared to say a simple bath fan used as a Principal Fan as required by the Ontario and National Building Code, the electrical consumption is a very small part of the total energy use.	We suggest you keep it very simple to start, to make a strong statement about how HRV/ERVs save consumers energy – it is not about electrical use as much as it is about total ventilation savings. Electrical use is something that could be added to a later version of the specification when the industry has matured more and more efficient fan motors are available.	Although the thermal impact is accounted for in the SRE and TRE calculations, the power consumption of an HRV increases the electricity consumption and represents an incremental load. There is a significant difference in CFM/watt from less than 0.4 to about 2 (and higher if ECMs are used). Operating costs for HRVs can be significant and represent a barrier to higher number of installations. Metrics for operating costs are normally addressed in ENERGY STAR specifications. If CFM/watt were to be removed, the SRE would have to be increased to reach a target of 25 to 30% of models qualifying. No one has provided evidence that non-HRV ventilation systems are actually used to any extent. Therefore an HRV is an incremental load and ventilation savings are not really seen.

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	BP2	3	Technical		Fan efficacy (CFM/Watt) or SPF (Watts/cfm) should be removed as criteria for Energy Star for "Specification 1.0". Currently, manufacturers have optimized products performance for SRE, which includes fan electrical energy; however, have not specifically optimized the CFM/Watt. The indicated power consumption in the HVI Certified Product Directory is for the total electrical power consumption of the product, not just the fan power. For these reasons blower efficacy should not be a criteria in specification 1. We recommend that fan efficacy data be based on HVI rated airflow performance for a pre-determined external static pressure and the corresponding manufactures power consumption be reported by manufactures to Energy Star, so that data can be collected and a fan efficacy calculated for inclusion in "Specification 2.0".	Although the thermal effect is accounted for in the SRE and TRE calculations, the power consumption of an HRV increases the electricity consumption and represents an incremental load. The HRV is using electricity to provide ventilation. Consequently it is appropriate to account for all of the electricity that it consumes. Perhaps the term blower efficacy should be modified if it is creating confusion. The definition seems clear Manufacturers choose the flows at which they rate their products. The test standard imposes a minimum static pressure for each rating test. Linking performance criteria to a specific flow rate and external static pressure would remove choice from the consumer and restrict the design of the units

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	BP2	3	Technical		Remove the -25C criteria as it will not allow for the program to expand beyond our boarder or follow a climate zone specific requirement such as seen in the EStar window program. Let's not segregate the two countries with this program as there are some markets in the US with favorable climates for HRV/ERV's.	This is a Canadian specification. The -25 test was developed to ensure that the unit operates during low temperatures and that any required defrost mechanism functions properly – in some ways it is analogous to "abnormal operating condition tests" that are required for heat pump equipment.
	BP2	3	Technical	It isn't clear in the draft but we would propose that a unit qualify for energy star if it meets the criteria for at least one of its operating speeds. Having all speeds meet the criteria would eliminate to many units and having only selected speed qualify would be to confusing in the industry and might entice manufacturers to duplicate a listing with reduced range.	We would propose that a unit qualify for energy star if it meets the criteria for at least one of its operating speeds.	Net supply flows for which the product qualifies must be specified in literature and labeling (Table 1 and 2) Accepting the proposal may encourage some manufacturers to test and rate at an unrealistic condition, where it will never operate.
	BP2	3	Technical	Based on real energy usage, the proposal unfairly excludes units such as 59% SRE, 1.1 cfm/watt which could be alleviated with a combined metric representing overall energy use. The fact is that all HRV/ERV are better than fans which currently bear the Energy star label. Can it be argued that this statement isn't true?		Some products are always near the cutoff points. These are not part of this product category. [Performance ratings for heat pumps are not used in deciding performance ratings for furnaces and boilers either]
	CC	3	Technical	The Minimum SRE calculation takes electricity into account. Manufacturers strongly disagree that a minimum fan efficacy requirement be included in the criteria at the beginning of the program. However, manufacturers are willing to report to NRCan data on cfm/w for ENERGY STAR qualified HRV's/ERV's, which are the top performers. This is a product that typically comes at a premium cost and stakeholders do not want the specification too stringent, as it may threaten the success of incentive or grant programs.		Although the thermal impact is accounted for in the SRE and TRE calculation, the power consumption of an HRV increases the electricity consumption and represents an incremental load.
	CC	3	Technical	Also note that the HVI Directory does not currently include data on cfm/w. HVI can be asked to consider adding this information to their directory for ENERGY STAR qualified products.		Data is published that list both CFM and W for the same test. It is therefore simple to calculate CFM/W as is currently done for ENERGY STAR ventilating fans.

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	CK	3	Technical	The cfm/W fan efficacy requirement should consider the degree of filtration provided by the HRV/ERV as this is a critical benefit of energy efficient ventilation for asthma/allergy suffers, especially in preferred stand-alone installations.		No filtration performance requirement has been included and none has been proposed. One could be considered for specification 2.0
	DF	3	Technical	The TRE is most likely the best efficiency measure for this type of products when operated during the cooling season.		Currently there have been no performance requirements included in the spec for TRE or cooling mode.
	DF	3	Technical	Also, a criterion for SRE at -25ºC is simply useless in areas where the outside temperature rarely gets lower than freezing point. We envision that this single Specification could have different criteria based either on climatic zones or on countries.		This is a Canadian specification. The -25 test was developed to ensure that the unit operates during low temperatures and that any required defrost mechanism functions properly – in some ways it is analogous to “abnormal operating condition tests” that are required for heat pump equipment. There are no areas of Canada where the outdoor temperature rarely gets below freezing point
	DF	3	Technical	The focus of HRV manufacturers has historically been put at improving the SRE and TRE (which take the electricity consumption into consideration) at airflows and static pressure that are not consistent. To introduce this rating now would not allow all products to be compared on a level playing field.	We recommend that the “cfm/watt” criterion be removed from the current draft Specification, for possible inclusion in the upcoming version 2.0 of the Specification. One of the reasons for this recommendation is the fact that the electricity consumption of the HRV/ERV is already taken into account in the determination of the SRE and the TRE. Also, cfm/watt ratings have not been reported in the past for this product category.	Although it is accounted for in the SRE and TRE calculation, the power consumption of an HRV increases the electricity consumption and represents an incremental load. Ratings will be taken from reported data from tests that were done under conditions that the manufacturers chose to rate the products. Essentially., the certified test results can be considered as equivalent to design operating points – i.e. the flows chosen by the manufacturer to rate the product performance. The testing standard requires a minimum static pressure for all tests

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	DF	3	Technical	We would be in agreement, during the beginning of the Energy Star for HRV/ERV program, to report the cfm/watt for eligible Energy Star product sold. This would allow for NRCan to define a new criterion (cfm/watt) based on hard facts. This could possibly lead to the definition of new test conditions/setup for the determination of the cfm/watt ratings that would allow for a fair comparison between products. Also, this would allow for manufacturers more time to re-test their products for these new ratings.		Both airflow and watts are already reported in the HVI directory for this product category. Additional testing is not required for currently-certified products
	DF	3	Technical	We encourage a quick adoption of the Energy Star Specification for HRV/ERV. July 1, 2009 seems a reasonable date. We recommend that the second step suggested (version 1.1) be eliminated and that a new version 2.0 of the Specification be implemented in 3 to 5 years from the first implementation date.		Second step implementation date has been revised in draft final version
	DS	3	Technical	There is no reason for a cold weather test requirement in an Estar specification. First, there is little or no energy to be saved by looking at performance during the last 12 hours of a 72 hour period of temperatures colder than -25C. The number of hours that this occurs is nonexistent over most of North America and is insignificant for most of the population even in Canada. Second, annual energy performance quantification in cold climates is probably always more effected by the defrost initiation temperature than by the efficiency of heat exchange as defined by the low temperature test. Third, the design of the cold weather test is such that minor variations in air conditions (primarily the humidity content of the room air) can cause large variations in the tested performance. The accuracy, reproducibility and the control of low temperature testing has not undergone sufficient review to develop a level of confidence that the efficiency data is meaningful. Fourth, there are local codes that can and do deal with the suitability of a product for a specific location. Most Canadian codes require a low temperature test. There is no reason to require this in an Energy Star Specification as the application suitability already is assured. In summation, a cold weather test requirement in this Energy Star Specification is unnecessary for consumer protection, and unnecessary and often possibly inaccurate for energy performance assessment. All it does is effectively insure there will not be a uniform Estar program in Canada and the US.		This is a Canadian specification. The -25 test was developed to ensure that the unit operates during low temperatures and that any required defrost mechanism functions properly – in some ways it is analogous to “abnormal operating condition tests” that are required for heat pump equipment. Local codes and enforcement are unlikely to address low temperature operation. If there is an issue in terms of repeatability of test results, this should have been brought to the attention of the CSA C439 TSC and HVI certification program staff. No other manufacturers or HVI staff have raised this concern

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	DS	3	Technical	It is critical that the performance criteria be linked to a specific air flow rate or external static pressure. The draft specification indicates that the product label and literature must state at what air flow the model meets Energy Star Qualification and this should be done. But this is insufficient -- once the consumer sees the Energy Star label they are unlikely to understand whether that applies to their application flow rate. Under the draft specification manufacturers could test a model to as low of an airflow as necessary to achieve the required Estar Qualification level. If a manufacturer feels Estar is important in the market, they can probably get any model to qualify just by re-testing at a lower airflow rate. The best way to define the ventilation performance would be to require performance data at a specific external static pressure. For example the model airflow, SRE and CFM/Watt would be specified at 0.2 inch external static pressure in each air stream on a specific standard speed setting if the model has multiple speeds. There may be other ways to deal with this in a standard way.		Manufacturers choose the flows at which they rate their products. The test standard imposes a minimum static pressure for each rating test. Linking performance criteria to a specific flow rate and external static pressure would remove choice from the consumer and restrict the design of the units The net supply flows for which the unit qualifies must be indicated as specified in Tables 1 and 2
	DS	3	Technical	Unit power consumption is already factored into SRE. If blower efficacy is deemed a necessary criterion then an alternative efficiency metric taking electrical consumption out of the SRE equation should be developed. Note that blower efficacy is not the only power consumption in an HRV/ERV and the complete unit power consumption should be factored not just the blower power consumption.		Although the thermal impact is accounted for in the SRE and TRE calculation, the power consumption of an HRV increases the electricity consumption and represents an incremental load. The HRV is using electricity to provide ventilation. Consequently it is appropriate to account for all of the electricity that it consumes. Perhaps the term fan efficacy could be modified if it is creating confusion, although the definition seems clear
	DS	3	Technical	In the current draft specification how does compliance occur if, as is the case, I believe, for every HVI Certified model, that the cold weather test is run at a different air flow rate than the 0C test		Net supply flows must be reported. To simplify, this may require clarification in the next specification or the Partner agreement. For example, a tolerance of ±10% could be used to correlate the low temperature flow and the 0°C flow if listing at a single consistent flow was desired

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	DS2	3	Technical	As the manufacturer of some of the most energy efficient ventilation products sold in North America and the originator of the EPA Energy Star Ventilating Fan program specs, I believe that the fan efficacy in HRV/ERV products is important.	I would recommend that you follow one of the earlier HVI proposals that used a multiplier approach that gave credit for the use of more efficient motors against lower SRE. This concept would use your base case of 60% SRE and 1.0 cfm/W and allow a manufacturer to "trade off" a higher motor efficacy against a lower SRE.	No such proposal has been submitted from HVI for an ENERGY STAR program
	GC	3	Technical	The "cfm/watt" criterion should be eliminated at least for the time being. Clearly the electrical consumption of an HRV is already included in the SRE and the TRE calculation. More importantly the cfm/watt ratings are not reported on the HVI sheets and this will make it difficult for contractors, builders and consumers to understand. Finally, when you consider the total energy use and savings of an HRV compared to a simple bath fan used as a Principal Fan as required by the Ontario and National Building Code, the electrical consumption is a very small part of the total energy use.	I strongly suggest the first specification be kept very simple to start to make a strong statement about how HRV/ERVs save consumers energy – it is not about electrical use as much as it is about total ventilation savings. Electrical use is something that could be added to a later version of the specification when the industry has matured more and more efficient fan motors are available.	Although the thermal impact of the electricity is accounted for in the SRE and TRE calculations, the power consumption of an HRV increases the electricity consumption and represents an incremental load. CFM is reported. W are reported Easy to calculate, as is done for ENERGY STAR for ventilating fans. Electricity use of the HRV can be substantial and can vary significantly for different HRV products that have similar SRE ratings, particularly when installed as a simplified installation

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	HVI	3	Technical	BLOWER EFFICACY: Blower efficacy (CFM/Watt) should be removed as a criterion for ENERGY STAR at this time. Currently, manufacturers have optimized product performance for Sensible Recovery Efficiency (SRE), which includes fan electrical energy; however, they have not specifically optimized the CFM/Watt. The indicated power consumption in HVI Publication 911: Certified Home Ventilating Products Directory© is for the total electrical power consumption of the product, not just the fan power	We recommend that blower efficacy data be based on HVI-certified airflow performance for a pre-determined external static pressure and the corresponding manufacturer's power consumption be reported by the manufacturer to ENERGY STAR, so that data can be collected and a blower efficacy calculated for inclusion in future program specifications	Manufacturers choose the flows at which they rate their products. The test standard imposes a minimum static pressure for each rating test. Linking performance criteria to a specific flow rate and external static pressure would remove choice from the consumer and restrict the design of the units The only power that is used by these products is solely associated with ventilation and heat/energy recovery (i.e. no lighting, resistance heating etc. is included).
	JG	3	Technical	I have reviewed the specifications and am in general agreement with them. I believe that ENERGY STAR offers the HRV industry a chance to both legitimize products and differentiate the better performers where industry typically makes greater profit per sale. Of course, the only legitimate way to do this is to reference the residential industry standard for HRV performance, CSA-C439. The two key parameters are Sensible Recovery Efficiency (SRE) and a flow to power ratio. All this is the basis of the proposed ENERGY STAR so I believe this is on the right track.		These parameters are incorporated in the spec
	JG	3	Technical	It would be nice to see higher requirements for the minimum SRE, particularly as real efficiency is further reduced through losses in cold side ductwork and through extensive use of electricity to drive central circulating blowers in the industry standard simplified installations. However, the 60% SRE value has been considered somewhat 'typical' for some time. I believe the SRE level is thus right for the time being but can not be allowed to slip any lower.		Agreed. No changes needed
	JR	3	Technical	Regarding the proposal, I think there should be a minimum fan efficiency requirement in all cases. Having a higher SRE should not permit the use of a less efficient fan, which will then result in higher electricity consumption and higher direct HRV operating cost.		This is incorporated in the draft specifications, except for an initial period, of three years during which products with SRE of 75% or higher have no minimum cfm per watt requirement

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	LR	3	Technical	Some HRV or ERV are not rated at -25C. To me it is not clear that all ENERGY STAR product must be rated at 0 and -25. Is that implied or should that be added that the equipment must be tested at both temperature?		In order to qualify for ENERGY STAR there are requirements for both 0°C and -25°C supply temperatures as described in section 3 of the draft performance specification.
	NH	3	Technical	Has standby loss been addressed in the spec?		Deferred for this specification because data is not available
	NH	3	Technical	I have noticed that there is no minimum fan efficacy for the Tier 1 levels, with an SRE of 75% or greater. As explained to me, this is due to a consideration allowed for manufacturers that have concentrated more on increasing the SRE of their units. If this is the reason, then we can support the two year moratorium on fan efficacy for these units.		Minimum was not included in Spec1 to allow for some lead time for manufacturers
	PG	3	Technical	Table1 SRE specifications are acceptable and we fully agree with a 0C and -25C requirement		No further discussion required
	PG	3	Technical	Table 1 The fan efficacy is a concern if no tolerance is allowed. We find that some product are attaining .98 cfm/watt and therefore would not qualify for the Energy Star Rating. Please keep in mind tests were done without the knowledge of this specification. In many cases a simple change to the test point would have resulted in achieving 1 cfm/watt with no changes to the HRV. It seems unfair that this disqualifies an HRV when it actually could meet the specification.	The efficacy requirement needs to be modified or removed at this time.	As outlined in the definition section (1G), there is an implied “tolerance” of 5% because cfm/W is rounded to the nearest tenth. Consequently, a result of .98 cfm/W would be reported as 1.0 which satisfies the minimum criteria for Table 1
	WT	3	Technical	In the past, the design of our HRV’s has been focused on obtaining HVI certification including a desired minimum requirement of 55 % SRE @ -25 C and to date our company has accomplished this in all of our designs. Although we have concerned ourselves with electrical energy requirements, the concern for fan efficacy has not been the main priority. Consequently, Trent Metals Limited has four (4) HRV designs that operate well within the requirements of the SRE percentage of specification 1.0 but fall ever so slightly short of the fan efficacy requirement of 1.0 CFM per watt.	Proposed Table 1, Specification 1.0, Effective July 1,2009 Minimum SRE @ 0 C supply temperature 60 % @ -25 C supply temperature 55 % Minimum Fan Efficacy with 0 C supply temperature SRE less than 75 % .9 cfm/W SRE 75 % or greater Any cfm /W	As outlined in the definition section (1G), there is an implied “tolerance” of 5% because cfm/W is rounded to the nearest tenth. Consequently, a cfm/W result that falls “ever so slightly” below 1.0 would be reported as 1.0 and would satisfy the minimum criteria for Table 1

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	WT	3	Technical	With an introduction date of July 1, 2011 for specification 1.1, we believe it would not be economically practical to redesign our HRVs to meet the requirements of specification 1.0. It would be our intention to take measures to comply with specification 1.1, thereby further extending the development and certification time. The proposed requirements of Table 2, Specification 1.1 would provide suitable time for product development in preparation for Specification 2.0.	Proposed Table 2, Specification 1.1, effective July 1, 2011 Minimum SRE @ 0 C supply temperature 64 % @ -25 C supply temperature 57 % Minimum Fan Efficacy with 0 C supply temperature SRE less than 75 % 1.1 cfm/W SRE 75 % or greater Any cfm /W	Redesign of product solely to meet spec 1.0 is considered unlikely. Products that comply with Table 2 would also comply with Table 1.
	PG	3, 7	Technical	Table 2 specifications would come into effect in approximately two years once adopted. The required development cycle is a burden on manufacturers and would require the spending of resources now when the economy is suffering. If these minor considerations are taken, Airia fully supports the NRCan proposal.	I suggest the implementation date be July 2012 and keep the criteria as is in table two.	This has been incorporated in the revised specification
	DS2	4.1	Technical	When the first version of the EStar ventilation spec came out, it called for a two year warranty, with the intent to go to three years. However, the spec was "dumbed down" to a one year warranty the next year to get more participation. I would hate to see that happen here.	While many of the manufacturers want to limit the warrantee to one year, we would welcome a compromise at three years.	One year has been incorporated

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	GC	4.1	Technical		The warranty requirement should be set to one year minimum. A five year warranty is higher than that for ENERGY STAR fans and furnaces and would be cost prohibitive for distributors and contractors. A long warranty requirement would handicap HRV/ERVs being accepted in the industry by builders and contractors who have to service these devices as consumers always expect warranties to cover both labour and materials	This has been incorporated in the revised specification
	HVI	4.1	Technical	WARRANTY REQUIREMENT: Inherently, HRV/ERV products are delivered to the homeowner with more consumer protection than consumer electronics. Heat/energy recovery ventilators are typically installed by licensed contractors. Installation permits under mechanical codes adopted by local code authorities are generally required. Local codes can specify if special durability or performance issues need to be addressed for a given location. Local codes and contractor installation of HRV/ERV products makes it unnecessary to provide an extended 5-year warranty.	HVI recommends the NRCan specification follow to the requirement in the U.S. EPA's ENERGY STAR specification for Residential Ventilation Fans which calls for a one-year minimum warranty.	This has been incorporated in the revised specification

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	RA	5	Technical	I would like to see an automatic programmable control requirement for an Energy Star HRV that would allow customers to choose a ventilation schedule that would sometimes shut the unit off to prevent over ventilation. We have found that over ventilation is very common in HRV equipped homes. The basic controls that are typically sold with HRV's are Hi/Low speed schemes that generally cause homes to be over-ventilated which can significantly increase the home's heating and cooling energy consumption and to a lesser degree the electricity consumption of the HRV itself. Many customers have also complained that their homes were uncomfortably dry due to the over-ventilation which caused them to shut off the HRV which then created other air quality issues. We have even spoken to some misguided customers who have compensated for the dryness by installing humidification systems and wasting more energy. A programmable automatic control system and proper operating instructions would go a long way to achieving sustainable energy savings while maintaining appropriate home air quality. It appears that most manufacturers already offer a programmable control as an option (extra).		Are prescriptive clauses re controls required to be included in manufacturers' instructions? No specific clauses have been proposed
	CC	5.2	Technical		Prescriptive installation requirements should be avoided, as they may overlap with other codes or programs. For example "8 feet of insulated flexible duct" requirement pertains to a noise reduction issue and does not comply with some codes and programs.	Which ones. It is currently required for ENERGY STAR inline fans. However, the suggested wording has been revised.
	HVI	5.2	Technical	In the draft specification, paragraph 5.2 listing installation practices is unnecessary and may contradict local code authorities and cause confusion. It is acceptable to make recommendations such as to use ECM motors for air handlers when using a simplified duct installation method		What specific portions of 5.2 contradict codes?

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	KM	5.2	Technical	Our one comment is to point out the benefits of control systems for heat recovery ventilators and suggest that this be incorporated in the specifications. HRV controls adapt ventilation requirements to the needs of building occupants. According to our information, controls can offset 25-75% of the extra energy use ordinarily required by heat recovery ventilators, and improve occupant comfort. These controls typically cost a few hundred dollars and are sold by HRV dealers.	Suggest that a short note about HRV controls be added to the mandatory installation instructions or consumer recommendations. For instance, you could add the phrase “Installation of a control system with your HRV will improve comfort and significantly reduce energy use by this device.” We feel that this is important information that consumers should be aware of.	Could be considered
	LR	5.2	Technical	In section 5.2, I was under the impression that "at least 8 feet..." is long but may be correct. Any reason why this is the minimum?		It is currently required for ENERGY STAR inline fans. However, the suggested wording has been revised.
	AW	7	Technical	While a first version of an Energy Star Specification for HRV/ERV cannot come soon enough, we are concerned about the mention of a second version coming so soon after that. At the very earliest, a second version should not be adopted until after 2012. This would coincide much better with changing building codes and avoid confusion. Changing product specifications more than every 3-5 years is very difficult for the HVAC industry to handle.		Table 1 and 2 define staged performance criteria for an H/ERV ENERGY STAR Specification. The Table 2 effective date has been delayed until July 2012 in the revised Specification The second version of the specification is anticipated within five years
	BP2	7	Technical	The timeline between “Specification 1.0” and “Specification 2.0” is too short; 1. It will not allow the program to mature in the market place and will only confuse and frustrate the stakeholders 2. It will make it difficult and expensive for the majority of manufacturers to meet these timeline	Remove “Specification 1.1” completely and make it “Specification 2” A reasonable progression timeline for the industry to react would be between 3 and 5 years	Table 1 and 2 define staged performance criteria for an H/ERV ENERGY STAR Specification. The Table 2 effective date has been delayed until July 2012 in the revised Specification The second version of the specification is anticipated within five years

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	BP2	7	Technical	The "Specification 1.1" should only be 3 to 5 years after the implementation of "Specification 1.0". The timeline between both specification may also create severe scheduling issues at Bodycote as manufacturers seek to redo current certifications (example: for lower static pressure to meet the fan efficacy) or for new product that meets the new guidelines.		Table 1 and 2 define staged performance criteria for an H/ERV ENERGY STAR Specification. The Table 2 effective date has been delayed until July 2012 in the revised Specification
	CC	7	Technical	Manufacturers are not in agreement with proposing another version 1.1 within two years of the program start date. A three to five year period would be feasible and consistent with the building code cycle. Next version could be considered for 2012 and the criteria should not be determined now. It is recommended that NRCan obtain market data on ENERGY STAR qualified products first and they review proposed levels.		Table 1 and 2 define staged performance criteria for an H/ERV ENERGY STAR Specification. The Table 2 effective date has been delayed until July 2012 in the revised Specification
	GC	7	Technical	I am concerned about the mention of a second version coming so soon after the initial introduction of the first labeling requirements. This kind of rapid change has already discouraged builders form participating in the ENERGY STAR for New Homes program. The industry needs at least 3 – 5 years to absorb the first label, especially since there are code changes coming in 2012 that will affect both the general industry and the ENERGY STAR for New Homes Program. Adding complexity to the HRV specification will only discourage builders and contractors.		Table 1 and 2 define staged performance criteria for an H/ERV ENERGY STAR Specification. The Table 2 effective date has been delayed until July 2012 in the revised Specification Specification 2.0 is anticipated within 5 years of 1.0

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	AP	General	Technical	HRV/ERV thermal effectiveness is measured at fresh air stream maintained at 0 oC and -25 oC. These two test conditions, at 0 oC and -25 oC, provides the realistic measures of heat recovery effectiveness. NRCan's R-2000, ENERGY STAR and other "best in class" initiatives for low rise residential buildings, requires the HRV/ERV performance data at 0 oC and -25 oC. There are several reasons for requiring the HRV/ERV tests at -25 C. These are as follows: 1. Two test conditions provide a realistic measure of the heat recovery effectiveness. For heat recovery calculations, one needs a simple interpolative measure of heat recovery effectiveness at different outdoor air temperatures. Generally, heat recovery effectiveness reduces at low operating temperatures. 2. Canada has a sustained cold climate. More than half of its housing stock is located in climates with sustained periods of very low temperatures ranging from -15 C to -35 C in winter months. HRV/ERV test performed at -25 C provides necessary 'cold stress' thermal performance of heat recovery cores. It also allows for verifying the performance at defrost cycles and ventilation reduction calculations at low temperature. 3. Low temperature testing also shows the 'durability' aspects of heat recovery core and associated controls.		Draft specification includes requirements for both temperatures
	BP2	General	Technical	The cover letter sent with the draft states that slightly more than 30% of the currently listed base-model HRV/ERVs would already comply with specification but reality is that the sales volume of eligible product is probably below closer to 10%		There has been no evidence provided to support the claim. In any event, if more than 30% of base models would qualify, but only 10% of the market sales actually qualify, it would seem to be a strong indicator that an ENERGY STAR program or similar is needed to encourage consumers to purchase the more efficient units. 20 to 30% of models qualifying is normal for an ENERGY STAR spec.
	CC	General	Technical	NRCan's letter dated December 12th indicated that more than 30% of HRV/ERV models currently listed in HVI's directory would likely meet the proposed levels, however manufacturers claim that the directory includes higher end product that is representative of only 10% of the product sold in Canada.		There has been no evidence provided to support the claim. In any event, if more than 30% of base models would qualify, but only 10% of the market sales actually qualify, it would seem to be a strong indicator that an ENERGY STAR program or similar is needed to encourage consumers and builders to purchase the more efficient units

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	RA	General	Technical	I do like the idea of efficient motors. Does the evaluation of the motors include the interactive heating effects of the motor (heat from the motor added to the airstream)		The thermal impact of the motors is taken into account for the SRE calculation
	GC	1	Scope	There does not appear to be any mention of ERVs. ERVs are quickly becoming a popular and useful choice in at least an Ontario application.	There should be at least a mention and a category for ERVs. The best would be to include a definition for "Total Heat Recovery Efficiency" (TRE), as outlined in the CSA Standard C439.	ERVs are defined in clause 1B There are no separate requirements for ERVs, but hey are a sub-category of HRVs as defined in this specification and the test standard Could be included in Spec 2.0
	AHRI	General	Scope	AHRI is in general supportive of an Energy Star program for residential air-to-air energy recovery ventilation appliances. However, we believe that such an Energy Star program should be correctly formulated. AHRI understands that EPA desires that this Energy Star program be clearly limited to residential HRV/ERV systems.	We agree with this limitation and recommend that the scope of the program be defined in some way to reflect that. Therefore we strongly recommend that the proposed Energy Star program be explicitly limited to units under 400 CFM to be consistent with residential applications.	HVI certification is required. It is understood that HVI only certifies residential products. Does HVI certify commercial units or have such a limitation? What is the basis for the proposed 400 CFM limit
	AHRI	General	Scope	It is our understanding that NRCan at this point intends to launch a Canada-only Energy Star program. But most residential HRV/ERVs are sold in both markets and with the same packaging.	We feel that the Energy Star program should be modified to be appropriate for both Canada and the United States	This is a Canadian specification
	AW	General	Scope	There does not appear to be any mention of ERVs. ERVs are quickly becoming a popular and useful choice in at least an Ontario application. There should be at least a mention and a category for ERVs.	The best would be to include a definition for "Total Heat Recovery Efficiency" (TRE), as outlined in the CSA Standard C439.	ERVs are defined in clause 1B There are no separate requirements for ERVs, but hey are a sub-category of HRVs as defined in this specification and the test standard

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	AW	General	Scope	We presume this standard only applies to Canada, as there is no mention of US requirements or provision for warmer climate zones.	Since US product does come to Canada, it should be made clear that these are Canadian requirements. Like other ENERGY STAR products, such as windows, it may be appropriate to have different criteria for different climate zones.	This is a Canadian specification
	DF	General	Scope	We have the perception, by reading the current draft, that the scope of this specification is Canada; we are not too sure because it is not mentioned anywhere. Our company sells products across North America and we would prefer a single Specification that covers for both Canada and USA. Consequently, a criterion for TRE would be more than appropriate for some areas where the air conditioning for residential applications consumes a significant amount of energy.		It is a Canadian spec. There are no performance specifications for operation in cooling mode.
	DS	General	Scope	Thank you for the opportunity to comment on the draft specification. RenewAire sees the value of an Energy Star program for HRV/ERV products. We would like to have all our models Energy Star Qualified. We sell virtually no residential product in Canada. Our main interest is a meaningful standard that will be adopted as the US standard soon and concurrent with the Canadian program. I feel this draft is critically flawed because it is not appropriate for the US.	I ask you to alter your plans to introduce a Canada only version. Here are my main concerns supporting this request.	This is a Canadian specification

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	DS	General	Scope	A single uniform Estar Specification should apply to Canada and the United States. All manufacturers actively selling product sell product in both markets. Labeling, advertising and promotion of products across the market would create unacceptable levels of confusion if there were two or multiple sets of qualification criteria. The market for HRV/ERV products is very small at this time, such that maintaining and promoting multiple specifications is cost prohibitive. The qualified product selection criteria need to be appropriate and discernable for all North American climate zones. The development of a Canadian-only specification may be easier to achieve but ignores the basic program needs for the US which really should be worked out before any Estar program goes into effect. Going ahead with one piece of the puzzle will not work without the other pieces already being available.	A single uniform Estar Specification should apply to Canada and the United States	Start with Canadian. US can build on it later NRCan may adopt, modify, or choose not to adopt that specification. Delay means loss of opportunity to influence the market to higher efficiency and sales.
	DS	General	Scope	The Specification must make clear it is applicable to residential models only, those under 400 CFM in capacity.		HVI certification is required. Does HVI certify commercial units or have such a limitation? What is the basis for the proposed 400 CFM limit
	DS2	General	Scope	Other comments include a need to include other climate considerations in a program that is applicable to all of North America. ERVs especially are often used in hot humid climates to temper the outdoor supply air by heating and dehumidifying the incoming air with the outgoing exhaust air that was cooled by the AC unit.		Canadian Specification based on heating mode operation
	GC	General	Scope	I presume this standard only applies to Canada, as there is no mention of US requirements or provision for warmer climate zones.	Since US product does come to Canada, it should be made clear that these are Canadian requirements. Like other ENERGY STAR products such as windows it may be appropriate to have different criteria for different climate zones.	This is a Canadian specification Not in this specification, but could be included for Spec 2.0

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	HVI	General	Scope	PROGRAM MARKET: If a Canada-only ENERGY STAR specification for HRV/ERVs is approved, it should be clear in the specification, product labeling and in literature that the product is ENERGY STAR-rated in Canada only. HVI members believe there should be a single, uniform ENERGY STAR program for HRV/ERVs that applies consistently to products sold in Canada as well as the United States. All manufacturers which actively sell HRV/ERVs sell the products in both countries. Divergent labeling, advertising and promotion of products across the two markets would create unacceptable levels of confusion. The market for HRV/ERV products is very small at this time and maintaining and promoting multiple specifications would be cost prohibitive. The qualified product selection criteria need to be appropriate and discernable for all North American climate zones		This is a Canadian specification
	HVI	General	Scope	PROGRAM SCOPE:	The specification must make clear that the program is applicable to residential products only – those under 400 CFM in capacity.	HVI certification is required. Does HVI certify commercial units or have such a limitation? What is the basis for 400 CFM
	DF	1	General	We are in full agreement that eligible products should be certified by HVI. Considering the recent bad press that Energy Star has received for programs in other products categories, HVI will ensure strong certification for performance of ventilation products in a third party, independent testing lab.		HVI certification is required
	DF	4	General	As you may know, the warranty requirement in the Energy Star Specification for Residential Ventilating Fans is also one year. We are of the opinion that HRV/ERV products should not be handicapped with a longer warranty, when compared to exhaust fans that perform the same function.	The warranty requirement should be set to one year minimum.	This has been incorporated into the revised Specification
	DF	5.2	General	Relative to paragraph 5.2, we agree that recommendations for installation should be required in the written documentation of each eligible product. However, the recommendations should be phrased such that they remain recommendations only. For instance, the first section of paragraph 5.2 is conflicting with some applicable building/mechanical codes, while the suggested installation in the second section would be of great concerns in hot and humid climates.		Which building/mechanical codes?

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	HVI	7, 12	General	IMPLEMENTATION OF FUTURE SPECIFICATION DOCUMENTS: Certification testing of HRV/ERV products is time-consuming and expensive on a per test basis, and even more so on a percent-of-revenue basis. There is only one laboratory in North America authorized by the Home Ventilating Institute to perform the required certification tests. Adequate time must be allowed so manufacturers can make desired product improvements and revisions and complete necessary testing. We oppose the implementation of a version 1.1 of the specification as it would not allow enough time for program administrators and key stakeholders to adequately analyze the performance of this completely new program. We agree that a version 2 of the specification should be implemented after a three- to five-year period of the program's initial start date		Table 1 and 2 define staged performance criteria for an H/ERV ENERGY STAR Specification. The Table 2 effective date has been delayed until July 2012 in the revised Specification Specification 2.is anticipated within 5 years of Specification 1.
	AHRI	General	General	Overall AHRI applauds NRCan's interest and focus on the HRV/ERV technology and supports a decided increase in the market and application of the technology		No discussion required
	AW	General	General	We are very pleased to see a draft of an Energy Star Draft Specification for HRVs and ERVs. We feel an ENERGY STAR Specification for HRV/ERVs will be helpful to the industry in promoting the technology to builders and consumers.		No discussion required
	AW	General	General	We appreciate the opportunity to participate in the review of this Specification and we look forward to assisting with the development of the final version of the Specification to be implemented.		No discussion required
	BP2	General	General	We applaud the efforts of those working on this important specification.		No discussion required
	CK	General	General	In addition to participating in and approving the HVI comments, UltimateAir adds two points:		Posted elsewhere – document comments are sorted
	DF	General	General	I am very pleased to see, at last, a first Energy Star draft Specification for HRVs and ERVs. We are of the opinion that such Specification, when implemented, will be favourable for the control of energy usage, for the reduction of Green House Gases emissions, for the health of the population and for the ventilation industry.		No discussion required

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	DH	General	General	We (on behalf of BC Hydro) strongly support the Energy Star energy performance standard for heat recovery ventilators, as now with the requirement for homes to be more air-tight, HRVs are becoming essential to save energy. BC is considering making HRVs mandatory in a future revision to the BC energy code for homes and an Energy Star standard would establish a benchmark for utility recommendations.	Please accept this note as one of strong support for this standard.	No discussion required
	GC	General	General	First let me say I am very pleased to see a draft of an Energy Star draft Specification for HRVs and ERVs. I feel strongly an ENERGY STAR Specification for HRV/ERVs will be helpful to the industry in promoting the technology to builders and consumers		No discussion required
	HVI	General	General	Thank you for the opportunity to provide input on NRCan's proposed ENERGY STAR specification for residential heat/energy recovery ventilators. We're delighted that this project is moving forward and look forward to the implementation of a viable, well- planned ENERGY STAR program for these product categories		No discussion required
	HVI	General	General	CLIMATE ZONE CONSIDERATIONS: HVI supports the development of climate-zone-specific performance criteria as necessary to support the sale of energy-efficient products throughout Canada and the United States. Some climate zones may benefit from cold weather or hot weather performance specification. While Winnipeg customers would benefit from -25C performance testing, Vancouver and marine climate zones, for example, would not benefit at all if cold temperature performance criteria were required		This is a Canadian Specification, based on certified product ratings for heating mode operation The -25 test was developed to ensure that the unit operates during low temperatures and that any required defrost mechanism functions properly – in some ways it is analogous to "abnormal operating condition tests" that are required for certification of heat pump equipment. The outdoor winter design temperature for Vancouver is -7°C (Source: CSA F-280). Without a proven defrost mechanism, an HRV may freeze when operated at that temperature.

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	HVI	General	General	This ENERGY STAR HRV/ERV program has the potential to benefit consumers greatly by utilizing as its foundation the time-tested and well-respected Certified Ratings Program established by HVI nearly 25 years ago. There is a wide range of third-party certified performance data available to help with selection of product for a particular climate zone or application. The ENERGY STAR program criteria should ensure that sales of this technology increases market penetration and that the products sold in the market continue to have increased energy efficiency. HVI supports a program that meets these ENERGY STAR program goals and stands ready to assist NRCan as necessary.		No discussion required
	JR	General	General	Broadening the list of products for which Energy Star identifies higher efficiency models is always welcome, particularly for products where there can be a significant range of efficiency, as is the case with HRV's.		No discussion required
	KC	General	General	We wish to indicate the importance of establishing ENERGY STAR qualification specifications for HRVs and ERVs. Ventilation upgrades using HRVs and ERVs in existing housing promotes enhanced indoor air quality while offering higher levels of air sealing in existing homes. As this type of equipment also operates potentially for long periods of time, the development of a set of ENERGY STAR specifications will help to reduce power consumption, improve equipment efficiency and save homeowners money		No discussion required
	KM	General	General	We are pleased to see that these devices will soon be covered by NRCan's ENERGY STAR program.		No discussion required
	LR	General	General	In favour of development and implementation of ENERGY STAR qualifications and specifications for HRVs/ERVs.		No discussion required
	NH	General	General	The Ontario government has directed the OPA to reduce total peak demand reduction by 6,300 MW from conservation programs by 2025. Currently Ontario is a summer peaking jurisdiction. As such, the following comments relate to the reduction of electricity demand with the proposed HRV ENERGY STAR spec in both summer and winter:		No discussion required
	NH	General	General	On past CSA TSC meetings on HRV/ERV our main concern was always operation during the heating season. Is HRV/ERV use in a household comparable during the cooling season?		No information is available. The draft specification is based on operation in heating mode

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	NH	General	General	Would an HRV/ERV typically continue to operate during a utility initiated Load Control event?		It would unless it were connected to the load controller
	PG	General	General	Thank you for this opportunity to comment of the proposed specifications for an Energy Star program in Canada. Airia supports this development and feel it will benefit both our industry and the users of our products, if properly implemented. I assume the goal of the proposal is to ultimately reduce energy use and green house gas production in Canada. Our challenge is to provide effective ventilation in an environment where the use of an HRV is an option under most building codes situations. As a result, builders and consumers may look for a low first cost solution to meeting minimal code requirements with regard to ventilation. An Energy Star program that gives the impression of increasing the cost of a home with no benefit will not work.		No discussion required
	PG	General	General	This establishes a partnership where as a manufacturer we support the development of efficient products while NRCan supports infrastructure to see that the benefit of the efficiency can be realized by consumers.		No discussion required
	SQ	General	General	We wish to indicate the importance of establishing ENERGY STAR qualification specifications for HRVs and ERVs. As this type of equipment operates potentially for long periods of time, the development of a set of ENERGY STAR specifications will help to reduce power consumption, improve equipment efficiency and save homeowners money.		No discussion required
	AP	1	Editorial	Definitions - Section 1 A. and B. - expand to: two isolated and non-mixed air streams passing through a heat recovery core		Doesn't isolated mean non-mixed
	AW	1	Editorial	Be sure to continue to use HVI as the certifying body. This will ensure a strong certification for performance of ventilation products in a third party, independent testing lab.		HVI is identified

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	BP	1	Editorial	*Fan Efficacy (cfm/W)* — the test airflow listed in the HVI 911 directory during a heating mode energy performance test with 0°C supply air temperature divided by the power consumption listed in the HVI 911 directory for the same test. Fan Efficacy (cfm/W) shall be rounded to and reported at the nearest one decimal place (tenth). Watts in the HVI Product Directory is not just fan power. It is power consumption of the whole HRV/ERV unit measured during the test. The nit picker in me says we should call this HRV/ERV Air Handling Efficacy or don't use the word efficacy and just call it cfm per Watt.	*Fan Efficacy (cfm/W)* — the test airflow listed in the HVI 911 directory during a heating mode energy performance test with 0°C supply air temperature divided by the power consumption for the whole unit as listed in the HVI 911 directory for the same test. Fan Efficacy (cfm/W) shall be rounded to and reported at the nearest one decimal place (tenth).	The HVI directory only lists the power for the whole unit in the HRV/ERV section. The only power that is used by these products is solely associated with ventilation and heat/energy recovery (i.e. no lighting, resistance heating etc. is included).
	BP2	1	Editorial	In the first section of Definitions and references, the fan efficacy is defined by cfm/Watts while in Europe they talk about Specific Fan Power (SFP) and they define it as Watts/cfm. These term seem fairly similar and European's have adopted the SPF ratio for quite some time now so why don't we adopt this nomenclature and forget about creating this new definition.	Specific Fan Power (SFP) SFP = Pe / V Where, V is volume flow (l/s) Pe is electrical power input (W) to the fan system or complete air movement installation	Cfm per watt is currently used in the ENERGY STAR specification for ventilation fans.
	CB	1	Editorial	Section 1) A. Heat-recovery ventilator (HRV) - Suggest a reference that forbids including any option or ability to mix airstreams.		The definition is taken from the test standard and it includes "two isolated airstreams". Is a different definition required?
	DF	1	Editorial		Under the definition of "HVI 920", the words "and the use of HVI trademark and labels" should be deleted. This aspect of the HVI programs is covered in the HVI Publication 925, HVI Label and Logos Procedure.	OK. The description of the publication was taken from the HVI website
	DS2	1	Editorial	I appreciate your willingness to use the HVI CPD as your data source.		No discussion required

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	LR	1	Editorial	HVI listing is listing HRVs and ERVs in section 3 of their certified product list. We may want to refer to that section to ensure that products are going to be listed in section 3? We have seen some products that are labeled HRV but are part of the exhaust fan section of the HVI product list.		Better to reference by description so that the requirements would not become obsolete by administrative changes or reformatting of the directory to a web-based listing. There should not be any HRVs listed in the exhaust fan section of the HVI directory
	BP2	12	Editorial	Going beyond “Specification 1.1” should be greater than 5 years period. Manufacturers cannot be developing new units every two years and any attempt to leapfrog ahead will make it cost prohibitive to compete in the market with today’s technology.		Future specifications will be developed as required
	AP	2	Editorial	Section 2- requires clarifications - refer to Standards and approved certifications (such as meeting CSA Standard... and/or certified as per the HVI....")		HVI certified directory is incorporated. Certification requires safety approval as well as testing to C439 at the designated HVI facility.
	CB	3	Editorial	Section 3) ENERGY STAR Specification Requirements for Qualifying Products - I believe there should be a reference here or elsewhere that HRV/ERV electrical consumption is based on a stand-alone fully ducted system approach and is fully independent of the electrical consumption of any additional fan coil or furnace blower fans. Currently, E* permits some air conditioners and air-source heat pumps to obtain electrical consumption reductions when matched to furnaces with energy efficient blower motors.		Could be considered
	GC	3	Editorial	I feel strongly that there should be provisions made for ERVs to recognize their unique benefits in reducing peak summer loads. At the very least the second version of the ENERGY STAR standard should have an ERV specification		Could be considered for specification 2.0. Would an HRV have to meet the levels developed for ERVs for summer operation?
	AW	4	Editorial	The warranty requirement should be set to a one year minimum. A five year warranty is higher than that for ENERGY STAR fans and furnaces and would be cost prohibitive for distributors and contractors. A long warranty requirement would handicap HRV/ERVs being accepted in the industry by builders and contractors who have to service these devices, as consumers always expect warranties to cover both labour and materials.		The revised Specification specifies one year minimum
	CB	4	Editorial	Section 4) Quality Assurance Requirements - There is no mention of random checks of equipment to ensure E* compliance. Is this included elsewhere outside of this document?		It is incorporated in HVI certification. Some description could be added here if needed, but it is better left to the Partner agreement

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	CC	4.1	Editorial		The recommended warranty requirement is one year, as opposed to five years. Five years is excessive compared to requirements in the ENERGY STAR program for furnaces and residential ventilating fans.	The revised Specification specifies one year minimum
	AW	5	Editorial	The recommendations for installation should be required in the written documentation of each eligible product. However, the recommendations should be phrased such that they are recommendations only. At the moment some of the requirements listed are conflicting with some applicable building/mechanical codes and others are not applicable in all climate zones.		Which requirements conflict with building codes? Has been revised in updated specification
	BP2	5	Editorial	An excessive number of installation details not related to energy performance have been included without justification and should be removed or properly justified. (8ft flex duct and others) If this program is going to require field inspection then it's far from being implemented. Get away from installation issues and let the local code officials' deal with those. The air handler note is the only item that I would try to save as it can have the greatest impact on energy usage		Consistent with in-line fan section of ENERGY STAR specifications for ventilating fans Has been revised in updated specification
	CB	5	Editorial		Section 5) Inclusion of Installation Instruction and Consumer Recommendations - Mention of proper installation methods for hanging solid and especially flex ducting should be included as it is not uncommon to see flex "strangled" by wire hangers where no saddle is included. Minimum radius for flex bending information should also be included (not just for solid duct).	Specific requirements will be developed and may better be included in partnership agreements

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	CB	5	Editorial		Section 5) Subsection 5.2 Installation Instruction - Second paragraph, change all references of "Heat/Energy recovery ventilator to HRV/ERV.	Generic term H/ERV has been defined and is used in the revised Specification
	CB	5	Editorial	Section 5) Subsection 5.2 Installation Instruction	Last sentence of first paragraph, change grille(s) to hood(s).	The entire sentence has been removed
	DS	5	Editorial	Local codes should cover installation practices not an Energy Star Specification.		Then such requirements/recommendations should be removed from the ENERGY STAR ventilating fan spec and others
	GC	5	Editorial	The recommendations for installation should be required in the written documentation of each eligible product. However, the recommendations should be phrased such that they remain recommendations only. At the moment some of the requirements listed are conflicting with some applicable building/mechanical codes and others are not applicable in all climate zones		Which recommendations conflict with which codes? Suggested wording has been revised in the updated Specification
	JH	5	Editorial	Section 5 talks of "Consumer Recommendations" but all that is included in the section are "Installation Instructions". To ensure proper, efficient operation of such a device, instruction labels should be readily visible on the outside of the unit to guide the homeowner on the best way to operate in the various installation configurations and in all seasons. Recommendations for annual or seasonal maintenance must also be provided. These must be written in plain, non-technical language to suit the typical end-user homeowner vocabulary and understanding, and allow them to get what they have paid for. There is absolutely nothing in the existing write-up which could be possibly understood and useful to a typical homeowner. Without this information, the idea of an ENERGY STAR rating on such a product is a farce, as there is absolutely nothing supplied to ensure energy efficient operation and performance of the product		Perhaps re-name to remove reference to consumer recommendations

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	JG	5.1	Editorial	I have never seen field installation of insulation around an HRV and believe it to be impractical. Standard practice is for the insulation to be installed in the factory where there can be far better quality control. Proper could be interpreted as 10 feet of cold side duct insulation. In an installation with 25 to 30 feet of cold side ducts to the HRV (these are more prevalent than one might think) the warming and cooling of air in the cold side ductwork would make the real efficiency of the HRV close to 0!	It should state something like 'All ductwork between the HRV and outside must be sealed using aluminum tape, mastic, or equivalent sealant. This ductwork must be insulated in its entirety to a minimum of RX (or RSIX) and the vapour barrier on the outside of it must also be sealed.'	Wording has been revised
	AP	5.2	Editorial	Section 5.2 - also include the installer certification requirements (such as certified by HRAI or HVI or other agencies) as we require in R2000		Is installer certification required in other ENERGY STAR programs.?
	JG	5.2	Editorial	It is rare that insulated flexible ductwork is used between the supply or exhaust grill and the HRV/ERV. Sound is rarely an issue with HRV installations. Sound is much more likely to be an issue with the furnace system where this sound attenuation technique is also not used. Use of flexible ductwork will increase static pressures thus reducing air flow and/or increasing power consumption. I do not believe that requiring it is necessary or advisable.	The last sentence should be completely removed	Done
	AHRI	7	Editorial	We believe it is unrealistic to introduce the second phase requirements just two years after the first-phase requirements are in place. The single test-and-certification facility that is available to perform Home Ventilating Institute (HVI) testing will not have the capacity to accommodate the demand for new development and certification testing. Further, the manufacturing infrastructure itself, which is not nearly so large or well-funded as that for kitchen appliances (as one example) will not be able to respond to any significant increase in requirements within the two-year period. Remember that a residential HRV/ERV Energy Star program should increase the market size as well as improve the average performance of the products in that market		Timing has been revised. Table 2 requirements have been delayed to July 2012.

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	DS	7	Editorial	Certification testing of HRV/ERV products is time consuming and expensive on a per test basis and even more so on a percent of revenue basis. There is only one laboratory established that can perform the required HVI Certification tests Adequate time needs to be allowed so manufacturers can make desired product improvements and revisions and complete necessary testing. We oppose the implementation of a Specification 1.1 program as not allowing enough time to determine the performance of the startup of a completely new program. We agree that a Specification 2 standard should be implemented after a three to five year period after the first implementation date.		Specification 2 is anticipated within 5 years of specification 1.0
	DS2	7	Editorial	While I can see some logic in announcing the next spec at the beginning, since product development takes some time, I would recommend that you slip this to a three year initial spec before you make it more stringent.		Timing has been revised. Table 2 requirements have been delayed to July 2012.
	CB	8	Editorial	Qualifying and Labelling Products under the Version 1.0 and Version 1.1 Specification -	Change subject line to "Qualifying and Labelling Products under Specifications Version 1.0 and 1.1."	Editorial – could be considered
	CB	8	Editorial	Qualifying and Labelling Products under the Version 1.0 and Version 1.1 Specification -	Add "logo or reference" or something to that affect after ". . . ENERGY STAR."	Editorial – could be considered
	AP	General	Editorial	Heat Recovery Ventilators and Energy Recovery Ventilators are used in low-rise residential buildings and homes to improve the indoor air-quality and energy efficiency. In Canada, HRV/ERV is tested as per the requirements in the CSA Standard C439-00 – Standard Laboratory Methods of Test for Rating the Performance of Heat/Energy-Recovery Ventilators. CSA Standard C439 specifies laboratory methods of testing and procedures for rating the apparent effectiveness and heat-recovery efficiency of a HRV/ERV. Procedures for determining air movement capabilities and the leakage of air from one airstream to another are also included.		No discussion required

Item	Commenter	Clause / Table	Type of comment	COMMENTS	PROPOSED CHANGE	DISCUSSION / RESOLUTION
	CB	General	Editorial		General editing comments: All definitions, section subject lines and table titles should follow the same capitalization practice. Avoid the use of fully written "Heat/Energy recovery ventilators" after first mention and replace with HRV/ERV.	H/ERV is now used where the context allows
	CC	General	Editorial	Members suggest working with the USA EPA asking them to consider adopting the Canadian ENERGY STAR requirements (once finalized) and recommend that the requirements be revised accordingly for various climate zones.		US EPA is aware of the Canadian program and have been provided with the same materials as other stakeholders.. They will decide, how and when to proceed.
	CC	General	Editorial	It should be recognized that the ENERGY STAR for Homes program has a mandatory requirement that includes installing an HRV/ERV. This is a product that typically comes at a premium cost and stakeholders do not want the specification too stringent, as it may threaten the success of programs.		This is not correct
	CC	General	Editorial	Manufacturers would like confirmation if an online database will be available by July 1, 2009.		The HVI directory is updated monthly.
	DS	General	Editorial	This Energy Star HRV/ERV program benefits greatly because HVI has administered a Certification program for these products for almost 25 years. There is a wide range of third party certified performance data available to help with selection of product for a particular climate zone or application. The Energy Star program criteria should be modified from the current proposal to insure increased market penetration by this technology with the resulting energy savings, and that the products sold in the market continue to have increased energy efficiency. RenewAire supports a program that meets these Estar program goals.		No discussion required
	RK	General	Editorial		Concerning the HRV/ERV Draft Energy Star Specification, please consider inserting metric units in addition to the imperial units.	M^3/min/W has been added as an informative metric equivalent to cfm/W.

List of commenters

AHRI	Karim Amrane, Vice President, Regulatory & Research, AHRI
AP	Anil Parekh, Senior Research Manager, Sustainable Buildings and Communities, NRCan
AW	Adam Wills, Redmond/Williams Sales Manager
BP	Bert Philips, Unies Inc.
BP2	Bertrand Poirier, Fantech
CB	Conrad Baumgartner, Industry Housing Officer, Housing
CC	Caroline Czajko, Manager, HRAI Manufacturers Division
CK	Craig Kinzelman, Jason Morosko, UltimateAir, Inc.
DF	Daniel Forest, Venmar Ventilation Inc.
DH	Derek Henriques, BC Hydro
DS	Douglas Steege, VP Marketing and Sales, Renewaire
DS2	Don Stevens, National R&D Manager, Panasonic Home & Environment Company
GC	Gord Cooke, Air Solutions Inc.
HVI	Jacki Golike, Executive Director, Home ventilating Institute
JG	James Glouchkow, Team Leader, Housing, Sustainable Buildings and Communities, Canmet, NRCan
JH	John Hodge, SCOPEER Consumer Rep, CSA
JR	John Rinella, Senior Advisor, Conservation, Ontario Ministry of Energy
KC	Kathy Crate, Acting Chief, Existing Housing Programs, NRCan
KM	Katherine Muncaster, Energy Efficiency Branch, BC Ministry of Energy, Mines and Petroleum Resources
LR	Louise Roux, Technical Coordinator, Housing Programs, NRCan
NH	Neil Hutchings, Program Manager - Codes and Standards, Ontario Power Authority
PG	Peter Grinbergs, Director Product Development and Engineering, Airia Group of Companies (formerly Nutech Group of Companies)
RA	Rob Andrushuk, Mechanical Systems Specialist, Manitoba Hydro
RK	Rodna Kolarova, Hydro One
SQ	Sylvain Quilliam, Chief, New Housing Programs, NRCan
WT	Wayne Taylor, Manufacturing Manager, Summeraire Division of Trent Metals Ltd.