Project Information	Messages / Results *
East Town Crossing, Unit # 101	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.61, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? Occupancy Type? Code Version? WSEC 2018

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1109 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pi	oposed Desig	gn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	128	38.3	0.300	128	38.3	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,307	73.2	0.054	1,307	70.6	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	146	78.8	0.540	146	78.8	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	202.3	Propo	osed UA Total	199.7	
	Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 and
				UA Perce	ent Reduction	1.3%	
					JA Reduction	2.6	

Table R4	106.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System			NA	
5.1	Efficient Water Heating			0.0	
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh		0.0	
7	Appliance Package			0.0	
			Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	1,109	sq. ft	
Classification	Small Dwelling	g Unit	
Notes			

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
101A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
101B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
Exterior Doors Area Weighted U										0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	5
				c	verhead (Glazing /	Area We	eighted U			

Plan	Component		Glazing		Wic	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
6	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	2	0	12.0	3.60
Sum of Area and UA									127.5	38.3
Vertical Glazing Area Weighted U										
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

	Flat/Vault	ed Ceilings					
	Plan	Component		Attic			
	ID	Description	Ref.	U		Area	UA
Ĺ		No ceiling/roof in thermal envelope	NA	-			0.0
l					Sum of Area and UA	0	0.0

Plan	cove Grade) Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,307	71
				Sum of Area and UA	1,307	71

Floor (ove	er crawl or exterior)						
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
				Sum of Area and UA	0	0	

Slab on Grade (less than 2 feet below grade)										
Plan	Component		Slab							
ID	Description	Ref.	F		Slab Perim	FP				
	R10 2' vertical (Code Baseline)	10-2	0.540		146	79	9			
						1				
	·	146	79	9						

Below Grade Walls and Slabs									
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum	of Area, Ler	gth and UA	0	0.0		0	0	

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System	wsu.edu/Documents/Duct%20Testing%20Standards%20_	
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Conditioned Space	
Is Duct Testing Requir	ed? No	

Compliance Certificate Instructions
Insulation Certificate for Residential New Construction Insulation Certificate
Duct Testing Affadavits
Existing Construction Affidavit, Existing
New Construction Affidavit, New
Prescriptive Checklist for 2018 WSEC Prescriptive Checklist
Alterations (Remodel) Worksheet Worksheet

Heating System Sizing - Proposed Design Try C	Out BetterBuiltNW's HVAC Sizing Tool: https://bet	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,109 ft2	
Conditioned Volume	9,427 ft3	
Leave blank to use default of 8.5 ft. ceiling height		
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	200	
Envelope Heat Load Sum of UA X ∆T	10,183 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	5,192 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	15,375 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	15,375 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	19,219 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing, Unit #102	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.79, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1061 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

RESULTS - Comparison of Baseline and Proposed Design							
Component Performance, R occupancies		Baseline			Proposed Desig	yn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		C	0.0	
Vertical Glazing U =	0.300	91	27.4	0.300	91	27.4	
Flat/Vaulted Ceilings U =	0.027	0	0.0		C	0.0	
Wall (above grade) U =	0.056	1,397	78.2	0.054	1,397	75.4	
Floors over Crawlspace U =	0.029	0	0.0		C	0.0	
Slab on Grade F =	0.540	151	81.7	0.540	151	81.7	
Below Grade Wall U =	0.042	0	0.0		C	0.0	
Below Grade Slab F =	0.570	0	0.0		C	0.0	
	Baseli	ne UA Total	199.3	Pro	osed UA Tota	196.5	
	Requ	ired Credits	4.5	Pro	posed Credits	6.5	from Tables 406.2 and 406.3
		_		UA Per	cent Reduction	1.4%	
					UA Reduction	2.8	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	6 are ≥ thos	se required in	Section R40	6. then the home meets the WS	EC.		

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	2 Air Leakage Control and Efficient Ventilation			0.0		
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh	h		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	gn 1,061 sq. ft
Classification	on Small Dwelling Unit
Notes	es

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
102A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
102B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	Area We	ighted U		0.300

Overhea	d Glazing									
Plan	Component		Glazing		Wie	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
						Sum	of Area	a and UA	0	0
				C	verhead (Glazing A	Area We	ighted U		

Plan	I Glazing Schedule Component		Glazing		Wig	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet		Area	UA
Exemp	t		-						-	-
1 2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	3	6	47.3	14.18
2 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3 7	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
Sum of Area and UA						91.3	27.4			
Vertical Glazing Area Weighted U						0.300				
Vertical Glazing and Doors Area Weighted U							0.300			

Flat/Vaulted Ceilings						
Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	No ceiling/roof in thermal envelope	NA	-			0.0
Sum of Area and UA 0 0.0						

	Walls (Above Grade)						
	Plan	Component		Wall			
	ID	Description	Ref.	U		Net Area	UA
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,397	75
Γ							
ľ							
1					Sum of Area and UA	1,397	75

Floor (over crawl or exterior)							
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
Sum of Area and UA						0	

	Slab on Grade (less than 2 feet below grade)							
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
1		R10 2' vertical (Code Baseline)	10-2	0.540		151	82	
1								
1								
				•	Sum of Perimeter and FP	151	82	

Below G	rade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
									1
									- I
Sum of Area, Length and UA					0.0		0	0	ð

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards					
Is this a hydronic heating system?	No				
Location of Ducts	Unducted				
Location of Air Handler	Conditioned Space				
Is Duct Testing Required? No					

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	n Affidavit, Existing	
New Construction	n <u>Affidavit, New</u>	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design	y Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,061 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,019 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	-
Sum of UA, including exempt door and window	197	
Envelope Heat Load Sum of UA X ∆T	10,022 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X.018))	4,967 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	14,989 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	14,989 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	18,737 Btu / Hour	
Building and Buck near 2033 X 1.40 101 all Other Systems		

Project Information	Messages / Results *
East Town Crossing, Unit # 103	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.54, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1008 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		P	roposed Desig	gn
	U	Area	UA	U	Area	UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	78	23.4	0.300	78	23.4
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,271	71.2	0.054	1,271	68.6
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	138	74.3	0.540	138	74.3
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0
		_				
	Baseli	ne UA Total	180.8	Prop	osed UA Total	178.3
	Requi	ired Credits	4.5	Prop	osed Credits	6.5
				UA Perce	ent Reduction	1.4%
					UA Reduction	2.5

ion R406, then

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation			0.0		
3	High Efficiency HVAC		Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas	
4	High Efficiency HVAC Distribution System			NA		
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	I	kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	1,008 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior	Doors									
Plan	Component		Door		Wio	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
103A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
103B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Are	a and UA	40	12.0
	Exterior Doors Area Weighted U									0.300

0	verhead	d Glazing										
	Plan	Component		Glazing		Wie	ith	He	eight			
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
										0		
										0		
										0		
										0		
										0		
Sum of Area and UA											0	0
Overhead Glazing Area Weighted U												

Vertical	Glazing Schedule							Ro	ws to Show	2
Plan	Component		Glazing		Wie	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
Sum of Area and UA 78.0										
					Vertical	Glazing A	lrea We	inhted II		0 300

Vertical Glazing Area Weighted U Vertical Glazing and Doors Area Weighted U

0.300

Plan	ted Ceilings Component		Attic			
ID	Description	Ref.	U		Area	UA
	No ceiling/roof in thermal envelope	NA	-			0.0
				Sum of Area and UA	0	0.0

Walls (At	pove Grade)					
Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,271	69
				Sum of Area and UA	1,271	69

Floor (ove	er crawl or exterior)						
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
				Sum of Area and UA	0	0	l i

Slab on G	rade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	R10 2' vertical (Code Baseline)	10-2	0.540		138	74	
				Sum of Perimeter and FP	138	74	

Below Grade Walls and Slabs												
Plan	Component		Wall	Wall	Wall	Slab		Slab				
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA				
Sum of Area, Length and UA					0.0		0	0]			

Ventilation Requirements		
Number of Bedrooms	2	
Run-Time Percent in Each 4-Hour Segment	100%	
Is the system Balanced?	Balanced	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	403
Whole House Mechanical Ventilation Airflow Rate	70	CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%								
Is this a hydronic heating system?	No								
Location of Ducts	Unducted								
Location of Air Handler	Conditioned Space								
Is Duct Testing Required? No									

inks to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Constructi	ion Affidavit, Existing	
New Constructi	ion <u>Affidavit, New</u>	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1,008 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,568 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	178
Envelope Heat Load Sum of UA X ∆T	9,092 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,719 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,811 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,811 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	17,264 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 104	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.7, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 976 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline				Proposed Design				
	U	Area	UA		U	Area	UA			
Doors U =	0.300	40	12.0		0.300	40	12.0			
Overhead Glazing U =	0.500	0	0.0			0	0.0			
Vertical Glazing U =	0.300	70	20.9		0.300	70	20.9			
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0			
Wall (above grade) U =	0.056	1,352	75.7		0.054	1,352	73.0			
Floors over Crawlspace U =	0.029	0	0.0			0	0.0			
Slab on Grade F =	0.540	145	78.1		0.540	145	78.1			
Below Grade Wall U =	0.042	0	0.0			0	0.0			
Below Grade Slab F =	0.570	0	0.0			0	0.0			
	Baseli	ne UA Total	186.8		Prop	osed UA Total	184.1			
	Required Credits				Proposed Credits			from Tables 406.2 and 4		
				UA Percent Reduction		ent Reduction	1.4%			
						UA Reduction	2.7			

Table R	Table R406.2 Fuel Normalization Credits												
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)								
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5								

Table R4	06.3 Energy Credits					
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*	
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation			0.0		
3	High Efficiency HVAC		Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas	
4	High Efficiency HVAC Distribution System			NA		
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy kWh		kWh		0.0	
7	Appliance Package			0.0		
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	976 sq. ft								
Classification Small Dwelling Unit									
Notes									

Exterior Doors										
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
104A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
104B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
	ـــــــــــــــــــــــــــــــــــــ									0.300

Overhead Glazing											
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
Sum of Area and UA											
Overhead Glazing Area Weighted U											

Vertica	I Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wio	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	t		-						-	-
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
2 2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	3	6	15.8	4.73
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Area	a and UA	69.8	20.9
					Vertical (Glazing A	rea We	iahted U		0.300

Vertical Glazing and Doors Area Weighted U

F	lat/Vault	ed Ceilings						
	Plan	Component		Attic				
	ID	Description	Ref.	U		Area	UA	
		No ceiling/roof in thermal envelope	NA	-			0.0	
_					Sum of Area and UA	0	0.0	

0.300

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,352	73
			•	Sum of Area and UA	1,352	73

Floor (ove	er crawl or exterior)						
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
				Sum of Area and UA	0	0	

	Slab on G	arade (less than 2 feet below grade)						
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		R10 2' vertical (Code Baseline)	10-2	0.540		145	78	
1								
_					Sum of Perimeter and FP	145	78	

E	Below Gr	ade Walls and Slabs								
	Plan	Component		Wall	Wall	Wall	Slab		Slab	
	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
										1
-		Sum	of Area, Ler	ngth and UA	0	0.0		0	0)

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	55 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy	.wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Conditioned Space	
Is Duct 7	Testing Required? No	

Compliance Certificate Compliance Certificate Instructions Insulation Certificate for Residential New Construction Insulation Certificate Insulation Certificate Duct Testing Affadavits Existing Construction Affidavit, Existing New Construction Affidavit, New Prescriptive Checklist for 2018 WSEC Prescriptive Checklist Alterations (Remodel) Worksheet Worksheet	Links to Download Forms, Checklists and Other Resources	Link	
Duct Testing Affadavits Existing Construction Affidavit, Existing New Construction Affidavit, New Prescriptive Checklist for 2018 WSEC Prescriptive Checklist	Compliance Certificate	Compliance Certificate	Instructions
Existing Construction Affidavit, Existing New Construction Affidavit, New Prescriptive Checklist for 2018 WSEC Prescriptive Checklist	Insulation Certificate for Residential New Construction	Insulation Certificate	
New Construction Affidavit, New Prescriptive Checklist for 2018 WSEC Prescriptive Checklist	Duct Testing Affadavits		
Prescriptive Checklist for 2018 WSEC Prescriptive Checklist	Existing Construction	on Affidavit, Existing	
• • • • • • • • • • • • • • • • • • • •	New Construction	on <u>Affidavit, New</u>	
Alterations (Remodel) Worksheet Worksheet	Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
	Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design	Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (∆T)	51 F	
Conditioned Floor Area, Proposed Design	976 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,296 ft3	
HVAC System Type	Heat Pump	1
Location of HVAC Distribution System	Unducted	
Elocation of hivito Distribution bystem	Onducied	
Sum of UA, including exempt door and window	184	
Envelope Heat Load Sum of UA X ∆T	9,387 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X.018))	4,569 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,956 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,956 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	17,445 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing, Unit # 105	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.54, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? Occupancy Type? Code Version? WSEC 2018

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1008 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pi	roposed Desig	gn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	78	23.4	0.300	78	23.4	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,271	71.2	0.054	1,271	68.6	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	138	74.3	0.540	138	74.3	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	180.8	Propo	osed UA Total	178.3	
	Requi	ired Credits	4.5	Prop	osed Credits	6.5	from Ta
				UA Perce	ent Reduction	1.4%	
					UA Reduction	2.5	

e required in Section R406, then the hol

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy		kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	1,008 sq. ft
Classification S	Small Dwelling Unit
Notes	

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
105A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
105B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Are	a and UA	40	12.0
	Exterior Doors Area Weighted U									0.300

0	verhead	d Glazing										
	Plan	Component		Glazing		Wie	ith	He	eight			
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
										0		
										0		
										0		
										0		
										0		
Sum of Area and UA										0	0	0
Overhead Glazing Area Weighted									ighted U			

Vertical	Glazing Schedule							Ro	ows to Show	2
Plan	Component		Glazing		Wio	ith	He	eight		ĺ
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						i - I	
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
2 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
Sum of Area and UA 78.0									78.0	23.4
					Vertical (Jazina /	area We	inhted II		0 300

Vertical Glazing Area Weighted U Vertical Glazing and Doors Area Weighted U

0.300

Plan	ted Ceilings Component		Attic			
ID	Description	Ref.	U		Area	UA
	No ceiling/roof in thermal envelope	NA	-			0.0
				Sum of Area and UA	0	0.0

Walls (At	pove Grade)					
Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,271	69
				Sum of Area and UA	1,271	69

Floor (ove	er crawl or exterior)						
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
				Sum of Area and UA	0	0	

Slab on G	rade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	R10 2' vertical (Code Baseline)	10-2	0.540		138	74	
				Sum of Perimeter and FP	138	74	

Below Gr	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
Sum of Area, Length and UA				0	0.0		0	0	

Ventilation Requirements		
Number of Bedrooms	2	
Run-Time Percent in Each 4-Hour Segment	100%	
Is the system Balanced?	Balanced	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403	
Whole House Mechanical Ventilation Airflow Rate	70 CFM	

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standard								
Is this a hydronic heating system?	No								
Location of Ducts	Unducted								
Location of Air Handler	Conditioned Space								
Is this a hydronic heating system? No Location of Ducts Unducted									

Links to Download Forms, Checklists and Other Resources	Link		
Compliance Certificate	Compliance Certificate	Instructions	
Insulation Certificate for Residential New Construction	Insulation Certificate		
Duct Testing Affadavits			
Existing Constructio	n <u>Affidavit, Existing</u>		
New Constructio	n <u>Affidavit, New</u>		
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist		
Alterations (Remodel) Worksheet	Worksheet		

Heating System Sizing - Proposed Design	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1,008 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,568 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	178
Envelope Heat Load Sum of UA X ∆T	9,092 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,719 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,811 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,811 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	17,264 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 106	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.7, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 976 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline			Prop	posed Desig	ın	
	U	Area	UA	U		Area	UA	
Doors U =	0.300	40	12.0	0.30	0	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	70	20.9	0.30	0	70	20.9	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,352	75.7	0.05	4	1,352	73.0	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	145	78.1	0.54	0	145	78.1	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
		_						
	Baseli	ne UA Total	186.8		Propose	ed UA Total	184.1	
	Requ	ired Credits	4.5		Propos	sed Credits	6.5	from Tables 406.2 and
				UA	Percent	t Reduction	1.4%	
					114	Reduction	2.7	

Table R4	06.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation	ı			0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy		kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	n 976 sq. ft
Classification Sn	n Small Dwelling Unit
Notes	35

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
106A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
106B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	Area We	ighted U		0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	D
				C	verhead (Glazing A	Area We	ighted U			

Vertical Glazing Schedule Rows to Show 3										
Plar	n Component		Glazing		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exem	pt		-						-	-
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
22	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	3	6	15.8	4.73
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Area	a and UA	69.8	20.9
					Vertical (Glazing A	rea We	iahted U		0.300

Vertical Glazing and Doors Area Weighted U

0.300

	Flat/Vaulted Ceilings									
	Plan	Component		Attic						
	ID	Description	Ref.	U		Area	UA			
		No ceiling/roof in thermal envelope	NA	-			0.0			
ſ										
Sum of Area and UA							0.0			

Plan	cove Grade) Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,352	73
				Sum of Area and UA	1,352	73

	Floor (ove	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Component Description	Ref.	U		Area		
Ī								
Ī								
	Sum of Area and UA							

	Slab on Grade (less than 2 feet below grade)											
	Plan	Component		Slab								
	ID	Description	Ref.	F		Slab Perim	FP					
		R10 2' vertical (Code Baseline)	10-2	0.540		145	78					
1												
_					Sum of Perimeter and FP	145	78					

E	Below Grade Walls and Slabs										
	Plan	Component		Wall	Wall	Wall	Slab		Slab		
	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA		
										1	
-		Sum	ngth and UA	0	0.0		0	0)		

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	55 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy	.wsu.edu/Documents/Duct%20Testing%20Standards%20_						
Is this a hydronic heating system?	No							
Location of Ducts	Unducted							
Location of Air Handler	Conditioned Space							
Is Duct Testing Required? No								

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	ction Affidavit, Existing	
New Construct	ction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	976 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,296 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	184
Envelope Heat Load Sum of UA X ∆T	9,387 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	4,569 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,956 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,956 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	17,445 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 107	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.61, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1108 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies	Baseline Proposed Design				Pr	jn		
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	130	38.9		0.300	130	38.9	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,305	73.1		0.054	1,305	70.5	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	146	78.8		0.540	146	78.8	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
Baseline UA Total			202.8		Propo	sed UA Total	200.2	
Required Credits			4.5		Prop	osed Credits	6.5	from Tables 406.2 and
					UA Perce	nt Reduction	1.3%	
					L. L.	JA Reduction	2.6	

Table R4	Table R406.2 Fuel Normalization Credits										
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)						
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5						

Table R4	Table R406.3 Energy Credits											
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*						
1	Efficient Building Envelope				0.0							
2	Air Leakage Control and Efficient Ventilation				0.0							
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas						
4	High Efficiency HVAC Distribution System				NA							
5.1	Efficient Water Heating				0.0							
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater						
6	Renewable Electric Energy	ŀ	kWh		0.0							
7	Appliance Package				0.0							
				Energy Credits	5.5							

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design 1,108 sq. ft						
Classification Small Dwelling Unit						
Notes						

Exterior Doors											
Plan	Component		Door		Wio	ith	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
Exempt									0	0.0	
107A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0	
107B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0	
									0	0.0	
									0	0.0	
									0	0.0	
									0	0.0	
									0	0.0	
									0	0.0	
									0	0.0	
									0	0.0	
						Sum	of Area	a and UA	40	12.0	
Exterior Doors Area Weighted U 0.300											

Overhead Glazing											
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	5
Overhead Glazing Area Weighted U											

Plan	Component		Glazing		Wid	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
7	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
Sum of Area and UA 129.5									129.5	38.9
Vertical Glazing Area Weighted U									0.300	
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

Flat/	/Vault	ed Ceilings					
PI	lan	Component		Attic			
I	ID	Description	Ref.	U		Area	UA
		No ceiling/roof in thermal envelope	NA	-			0.0
					Sum of Area and UA	0	0.0

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,305	70

Floor (ove	er crawl or exterior)						
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
		0	0				

Slab on Grade (less than 2 feet below grade)										
Plan	Component		Slab							
ID	Description	Ref.	F		Slab Perim	FP				
	R10 2' vertical (Code Baseline)	10-2	0.540		146	79	9			
						1				
	·			Sum of Perimeter and FP	146	79	9			

Below Grade Walls and Slabs										
Plan	Component		Wall	Wall	Wall	Slab		Slab		
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA		
	Sum	of Area, Ler	gth and UA	0	0.0		0	0		

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy.	wsu.edu/Documents/Duct%20Testing%20Standards%20_						
Is this a hydronic heating system?	No							
Location of Ducts	Unducted							
Location of Air Handler	Conditioned Space							
Is Duct Testing Required? No								

inks to Download Forms, Checklists and Other Resources	Link		
Compliance Certificate	Compliance Certificate	Instructions	
Insulation Certificate for Residential New Construction	Insulation Certificate		
Duct Testing Affadavits			
Existing Cons	struction Affidavit, Existing		
New Cons	struction Affidavit, New		
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist		
Alterations (Remodel) Worksheet	Worksheet		

Heating System Sizing - Proposed Design Try C	Dut BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,108 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,418 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	200
Envelope Heat Load Sum of UA X AT	10,208 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	5,187 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	15,396 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	15,396 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	19,245 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit #108	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.77, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? Occupancy Type? Code Version? WSEC 2018

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1061 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	yn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	101	30.4	0.300	101	30.4	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,387	77.7	0.054	1,387	74.9	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	151	81.7	0.540	151	81.7	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	201.7	Propo	sed UA Total	199.0	
	Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 and 406.3
				UA Perce	nt Reduction	1.4%	
				L	JA Reduction	2.8	

Table R4	06.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	106.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System			NA	
5.1	Efficient Water Heating			0.0	
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh		0.0	
7	Appliance Package			0.0	
			Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	gn 1,061 sq. ft
Classification	on Small Dwelling Unit
Notes	25

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
108A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
108B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Overhe	ad Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Area	a and UA	0	0	D
				c	verhead (Glazing A	Area We	ighted U			

Plan	Glazing Schedule Component		Glazing		Wid	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet		Area	UA
Exempt			-						-	-
1 2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	3	6	47.3	14.18
2 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
						Sum	of Area	a and UA	101.3	30.4
					Vertical C	Glazing A	vrea We	ighted U		0.300
				Vertical G	lazing and	Doors A	vrea We	ighted U		0.300

Vertical Glazing and Doors Area Weighted U
--

Flat/Vaul	Ited Ceilings					
Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	No ceiling/roof in thermal envelope	NA	-			0.0
				Sum of Area and UA	0	0.0

V	Walls (Above Grade)								
	Plan	Component		Wall					
	ID	Description	Ref.	U		Net Area	UA		
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,387	75		
Γ									
					Sum of Area and UA	1,387	75		

Floor (over crawl or exterior)									
Plan	Component		Floor			UA			
ID	Description	Ref.	U		Area				
	0	0]						

;	Slab on Grade (less than 2 feet below grade)									
	Plan	Component		Slab						
	ID	Description	Ref.	F		Slab Perim	FP			
		R10 2' vertical (Code Baseline)	10-2	0.540		151	82			
			•	•	Sum of Perimeter and FP	151	82			

E	Below Grade Walls and Slabs									
	Plan	Component		Wall	Wall	Wall	Slab		Slab	
	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
										1
-		Sum	0	0.0		0	0)		

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standar							
Is this a hydronic heating system?	No						
Location of Ducts	Unducted						
Location of Air Handler	Conditioned Space						
Is Duct Testing Required? No							

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design	out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,061 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,019 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	-
Sum of UA, including exempt door and window	199	
Envelope Heat Load Sum of UA X ∆T	10,147 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X.018))	4,967 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	15,115 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	15,115 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	18,893 Btu / Hour	
······································		

Project Information	Messages / Results *
East Town Crossing, Unit # 201	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.64, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? Occupancy Type? Code Version? WSEC 2018

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1106 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	gn
	U	Area	UA	U	Area	UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	128	38.3	0.300	128	38.3
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,322	74.0	0.054	1,322	2 71.4
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0
		_				
	Baseli	ne UA Total	124.3	Propo	sed UA Total	121.6
	Requi	ired Credits	4.5	Prop	osed Credits	6.5
				UA Perce	nt Reduction	2.1%
				L. L.	JA Reduction	2.6

Table R4	Table R406.2 Fuel Normalization Credits									
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)					
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5					

Table R4	106.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy		kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	1,106	sq. ft	
Classification	Small Dwelling	J Unit	
Notes			

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
201A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
201B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	Area We	ighted U		0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	0
				c	verhead (Glazing A	Area We	eighted U			

Plan	Component		Glazing		Wio	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
6	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	2	0	12.0	3.60
						Sum	of Area	a and UA	127.5	38.3
					Vertical (Slazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

	Flat/Vault	ed Ceilings					
	Plan	Component		Attic			
	ID	Description	Ref.	U		Area	UA
l		No ceiling/roof in thermal envelope	NA	-			0.0
ľ							
ľ							
ľ					Sum of Area and UA	0	0.0

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,322	71

Floor (ov	er crawl or exterior)						
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
	No floors in thermal envelope	NA	-			0	
				Sum of Area and UA	0	0	

	Slab on G	irade (less than 2 feet below grade)						
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
ł		No slab on grade	NA	-			0	
					Sum of Perimeter and FP	0	0	1

Below Gra	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum	of Area, Ler	igth and UA	0	0.0		0	0	

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	t <u>100%</u>
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy.	wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Conditioned Space	
Is Duct Testing Req	juired? No	_

inks to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Cons	truction Affidavit, Existing	
New Cons	truction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try C	Dut BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,106 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,401 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Elocation of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	122
Envelope Heat Load Sum of UA X ΔΤ	6,203 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	5,178 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,381 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,381 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,226 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 202	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.83, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1061 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	jn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	89	26.8	0.300	89	26.8	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,413	79.1	0.054	1,413	76.3	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ine UA Total	117.9	Propo	sed UA Total	115.1	
	Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 and 4
		UA Perce	ent Reduction	2.4%			
					JA Reduction	2.8	

Table R4	Table R406.2 Fuel Normalization Credits										
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)						
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5						

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System			NA		
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	ł	kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	gn 1,061 sq. ft						
Classification Small Dwelling Unit							
Notes	es						

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
202A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
202B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
	Sum of Area and UA										0
				C	Overhead	Glazing /	Area We	eighted U			

Vertica	I Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	t		-						-	-
12	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	3	6	47.3	14.18
2 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
36	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	2	0	12.0	3.60
						Sum	of Area	a and UA	89.3	26.8
					Vertical (Glazing A	rea We	iahted U		0.300

Vertical Glazing and Doors Area Weighted U

Flat/Vaulted Ceilings										
Plan	Component		Attic							
ID	Description	Ref.	U		Area	UA				
	No ceiling/roof in thermal envelope	NA	-			0.0				
				Sum of Area and UA	0	0.0				

0.300

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,413	76
	·			Sum of Area and UA	1,413	76

	Floor (ove	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
		No floors in thermal envelope	NA	-			0	
Ī								
Ī								
					Sum of Area and UA	0	0	

	Slab on G	arade (less than 2 feet below grade)						
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		No slab on grade	NA	-			0	
-					Sum of Perimeter and FP	0	0	

	Below Gr	ade Walls and Slabs								
	Plan	Component		Wall	Wall	Wall	Slab		Slab	
	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
Ī										1
Γ										1
Γ										
		Sum	of Area, Ler	ngth and UA	0	0.0		0	0	,

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy	wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Conditioned Space	
Is Duct	Testing Required? No	

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	tion Affidavit, Existing	
New Construct	tion <u>Affidavit, New</u>	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Y Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,061 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,019 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	115
Envelope Heat Load Sum of UA X AT	5,869 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,967 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,836 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,836 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	13,545 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 203	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.57, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1008 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	gn
	U	Area	UA	U	Area	UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	78	23.4	0.300	78	23.4
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,285	71.9	0.054	1,285	69.4
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0
				_		
		ne UA Total	107.3	•	osed UA Total	
	Requ	ired Credits	4.5	Prop	osed Credits	
				UA Perce	ent Reduction	2.4%
					JA Reduction	2.6

406 are ≥ those required in Section R406, then the hor If the Prope l arge Propo

Table R4	06.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*	
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy		kWh		0.0	
7 Appliance Package			0.0			
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	1,008 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
203A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
203B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Are	a and UA	40	12.0
Exterior Doors Area Weighted U									0.300	

	d Glazing	1								
Plan	Component	Def	Glazing	~	Wie	dth Inch		eight Inch	A	
ID	Description	Ref.	U	Qt.	Feet		Feet	-	Area	UA
									0	
									0	
									0	
									0	
						L	L		0	
Sum of Area and UA 0 0										
Overhead Glazing Area Weighted U										

Vertical Glazing Schedule Rows to Show							2				
	Plan	Component		Glazing		Wie	dth	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
	Exempt			-						-	-
1	1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
2	3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
Sum of Area and UA 78.0 23.4											
Vertical Glazing Area Weighted U 0.300											
					Vertical G	lazing and	Doors A	Area We	ighted U		0.300

Flat/Vaulted Ceilings								
Plan	Component		Attic					
ID	Description	Ref.	U		Area	UA		
	No ceiling/roof in thermal envelope	NA	-		1	0.0		
Sum of Area and UA						0.0		

Walls (Above Grade)							
Plan	Component		Wall				
ID	Description	Ref.	U		Net Area	UA	
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,285	69	
				Sum of Area and UA	1,285	69	

	Floor (over crawl or exterior)							
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
		No floors in thermal envelope	NA	-			0	
ľ	Sum of Area and UA 0 0							
ł								

Sla	Slab on Grade (less than 2 feet below grade)							
F	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		No slab on grade	NA	-			0	
					Sum of Perimeter and FP	0	0	j .

Below Gr	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
Sum of Area, Length and UA 0 0.0 0 0									

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.ener	Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%2				
Is this a hydronic heating system?	No					
Location of Ducts	Unducted					
Location of Air Handler	Conditioned Space					
Is Duct Testing Required? No						

nks to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Constru	uction Affidavit, Existing	
New Constru	uction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,568 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	105
Envelope Heat Load Sum of UA X ΔT	5,343 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,719 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,062 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,062 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	12,578 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 204	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.73, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? Occupancy Type? Code Version? WSEC 2018

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 976 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	jn 🛛	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	70	20.9	0.300	70	20.9	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,366	76.5	0.054	1,366	73.8	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	109.4	Propo	sed UA Total	106.7	
	Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2
				UA Perce	nt Reduction	2.5%	
				ι	JA Reduction	2.7	

Table R4	106.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	106.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System	C Distribution System			
5.1	Efficient Water Heating			0.0	
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh		0.0	
7	Appliance Package			0.0	
			Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	976 sq. ft
Classification Small	all Dwelling Unit
Notes	

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
204A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
204B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Area	a and UA	0	0	
				c	Overhead	Glazing /	Area We	ighted U			

Vertica	I Glazing Schedule							Ro	ws to Show	3
Plan	Plan Component Glazing Width Height									
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	t		-						-	-
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
2 2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	3	6	15.8	4.73
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Area	a and UA	69.8	20.9
					Vertical (Glazing A	rea We	iahted U		0.300

Vertical Glazing and Doors Area Weighted U

Flat/Vault	ed Ceilings					
Plan	Component		Attic			
ID	Description	Ref.	U	Area	UA	
	No ceiling/roof in thermal envelope	NA	-		0.0	

Sum of Area and UA 0 0.0

0.300

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,366	74
				Sum of Area and UA	1,366	74

	Floor (ove	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
		No floors in thermal envelope	NA	-			0	
Ī								
					Sum of Area and UA	0	0	

:	Slab on G	irade (less than 2 feet below grade)						
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		No slab on grade	NA	-			0	
			•		Sum of Perimeter and FP	0	0	

Below Gr	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum	of Area, Ler	ngth and UA	0	0.0		0	0	1

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	55 CFM

HVAC Thermal Distribution System	I Distribution System Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20_		
Is this a hydronic heating system?	No		
Location of Ducts	Unducted		
Location of Air Handler	Conditioned Space		
Is Duct Testing Required? No			

Compliance Certificate Compliance Certificate Instructions
Insulation Certificate for Residential New Construction
Duct Testing Affadavits
Existing Construction Affidavit, Existing
New Construction <u>Affidavit, New</u>
Prescriptive Checklist for 2018 WSEC Prescriptive Checklist
Alterations (Remodel) Worksheet Worksheet

Heating System Sizing - Proposed Design	y Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	976 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,296 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	-
Sum of UA, including exempt door and window	107	
Envelope Heat Load Sum of UA X ∆T	5,442 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,569 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,011 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,011 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	12,514 Btu / Hour	
building and buck riear Loss X 1.40 101 all other systems		

Project Information	Messages / Results *
East Town Crossing, Unit # 205	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.57, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1008 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	yn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	78	23.4	0.300	78	23.4	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,285	71.9	0.054	1,285	69.4	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	107.3	Propo	osed UA Total	104.8	
	Requi	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406
				UA Perce	ent Reduction	2.4%	
					JA Reduction	2.6	

ion R406, then the

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC	ncy HVAC			3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System	Efficiency HVAC Distribution System			NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	k	kWh		0.0	
7	Appliance Package			0.0		
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	n 1,008 sq. ft
Classification	n Small Dwelling Unit
Notes	s

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
205A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
205B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Are	a and UA	40	12.0
					Exterior	Doors A	Area We	ighted U		0.300

0	verhead	d Glazing										
	Plan	Component		Glazing		Wie	ith	He	eight			
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
										0		
										0		
										0		
										0		
										0		
Sum of Area and UA									0	0	0	
					c	verhead (Glazing A	Area We	ighted U			

Vertical	Glazing Schedule							Ro	ws to Show	2
Plan	Component		Glazing		Wie	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Are	a and UA	78.0	23.4
					Vertical	Glazing A	lrea We	inhted II		0 300

Vertical Glazing Area Weighted U Vertical Glazing and Doors Area Weighted U

0.300

Flat/Vau	Ited Ceilings					
Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	No ceiling/roof in thermal envelope	NA	-			0.0
	·			Sum of Area and UA	0	0.0

Walls (Above Grade)										
Plan	Component		Wall							
ID	Description	Ref.	U		Net Area	UA				
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,285	69				
				Sum of Area and UA	1,285	69				

	Floor (ov	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
		No floors in thermal envelope	NA	-			0	
l					Sum of Area and UA	0	0	
					Sum of Area and UA	U	U	ļ

SI	ab on G	rade (less than 2 feet below grade)						
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		No slab on grade	NA	-			0	
					Sum of Perimeter and FP	0	0]

Below Gr	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum	of Area, Ler	ngth and UA	0	0.0		0	0	

Ventilation Requirements	
Number of Bedrooms	i <u>2</u>
Run-Time Percent in Each 4-Hour Segment	nt <u>100%</u>
Is the system Balanced?	Palanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	? Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	n IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	e 70 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.	energy.wsu.edu/Documents/Duct%20Testing%20Standards%20
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Conditioned Space	
Is	Duct Testing Required? No	

inks to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Constru	uction Affidavit, Existing	
New Constru	uction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1,008 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,568 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	105
Envelope Heat Load Sum of UA X ΔT	5,343 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,719 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,062 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,062 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	12,578 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 206	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.73, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 976 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	jn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	70	20.9	0.300	70	20.9	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,366	76.5	0.054	1,366	73.8	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	109.4	Propo	sed UA Total	106.7	
	Requi	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 and 40
				UA Perce	nt Reduction	2.5%	
				L L	JA Reduction	2.7	

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*	
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	k	κWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design 976 sq. ft	
Classification Small Dwelling Unit	
Notes	

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
206A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
206B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
Exterior Doors Area Weighted U 0.300										

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
Sum of Area and UA 0 0											
Overhead Glazing Area Weighted U											

Vertical Glazing Schedule Rows to Show									3	
Plan	Component		Glazing		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot		-						-	-
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
22	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	3	6	15.8	4.73
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
Sum of Area and UA 69.8								20.9		
Vertical Glazing Area Weighted U							0.300			

Vertical Glazing and Doors Area Weighted U

0.300

	Flat/Vaulted Ceilings							
	Plan	Component		Attic				
	ID	Description	Ref.	U		Area	UA	
		No ceiling/roof in thermal envelope	NA	-			0.0	
ľ								
	Sum of Area and UA 0 0.0							

Walls (Above Grade)						
Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,366	74
Sum of Area and UA 1,366						74

	Floor (over crawl or exterior)							
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
		No floors in thermal envelope	NA	-			0	
-					Sum of Area and UA	0	0	

:	Slab on Grade (less than 2 feet below grade)							
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		No slab on grade	NA	-			0	
	Sum of Perimeter and FP 0 0							

	Below Gr	ade Walls and Slabs								
	Plan	Component		Wall	Wall	Wall	Slab		Slab	
	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
										1
Sum of Area, Length and UA 0 0.0 0						0)			

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	55 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy	wsu.edu/Documents/Duct%20Testing%20Standards%20_				
Is this a hydronic heating system?	No					
Location of Ducts	Unducted					
Location of Air Handler	Conditioned Space					
Is Duct Testing Required? No						

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	n Affidavit, Existing	
New Construction	n <u>Affidavit, New</u>	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool	
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (∆T)	51 F	
Conditioned Floor Area, Proposed Design	976 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,296 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	107	
Envelope Heat Load Sum of UA X ∆T	5,442 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,569 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,011 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,011 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	12,514 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing, Unit # 207	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.64, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? Occupancy Type? Code Version? WSEC 2018

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1105 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pi	roposed Desig	yn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	130	38.9	0.300	130	38.9	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,320	73.9	0.054	1,320	71.3	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	124.8	Propo	osed UA Total	122.1	
	Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 40
		_		UA Perce	ent Reduction	2.1%	
					UA Reduction	2.6	

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System	Efficiency HVAC Distribution System			NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	I	kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design 1,105 sq. ft
Classification Small Dwelling Unit
Notes

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
207A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
207B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	Area We	ighted U		0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	ith	Н	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	D
				c	verhead (Glazing A	Area We	eighted U			

Plan	Glazing Schedule Component		Glazing		Wic	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
7	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
						Sum	of Are	a and UA	129.5	38.9
Vertical Glazing Area Weighted U										0.300
				Vertical G	lazing and	Doors A	Area We	ighted U		0.300

	Flat/Vault	ted Ceilings					
	Plan	Component		Attic			
	ID	Description	Ref.	U		Area	UA
		No ceiling/roof in thermal envelope	NA	-			0.0
ſ							
ſ							
ľ							
ſ					Sum of Area and UA	0	0.0

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,320	71

Floor (ov	er crawl or exterior)						
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
	No floors in thermal envelope	NA	-			0	
				Sum of Area and UA	0	0	

Slab on G	arade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	No slab on grade	NA	-			0	
							Ì
							Ì
							Ì
				Sum of Perimeter and FP	0	0	l

Below Gra	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum	of Area, Ler	ngth and UA	0	0.0		0	0	

Ventilation Requirements		
Number of Bedrooms	3	
Run-Time Percent in Each 4-Hour Segment	100%	
Is the system Balanced?	Balanced	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403	
Whole House Mechanical Ventilation Airflow Rate	70 CFM	

HVAC Thermal Distribution System Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standard								
Is this a hydronic heating system?	No							
Location of Ducts	Unducted							
Location of Air Handler	Conditioned Space							
Is Duct Testing Requi	ed? No	_						

inks to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Cons	truction Affidavit, Existing	
New Cons	truction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try C	Dut BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,105 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,393 ft3
	Heat Dump
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	122
Envelope Heat Load Sum of UA X ∆T	6,228 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	5,173 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,401 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,401 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,251 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 208	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.8, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1061 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pi	roposed De	esig
	U	Area	UA	U	Area	
Doors U =	0.300	40	12.0	0.300	4	0
Overhead Glazing U =	0.500	0	0.0			0
Vertical Glazing U =	0.300	101	30.4	0.300	10	1
Flat/Vaulted Ceilings U =	0.027	0	0.0		()
Wall (above grade) U =	0.056	1,401	78.5	0.054	1,401	1
Floors over Crawlspace U =	0.029	0	0.0		()
Slab on Grade F =	0.540	0	0.0		()
Below Grade Wall U =	0.042	0	0.0			0
Below Grade Slab F =	0.570	0	0.0		0	
		_				_
	Baselir	ne UA Total	120.8	Propo	osed UA Total	
	Requi	red Credits	4.5	Prop	osed Credits	
				UA Perce	ent Reduction	
					UA Reductio	n

Table R4	Table R406.2 Fuel Normalization Credits												
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)								
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5								

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation	trol and Efficient Ventilation			0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	1	kWh		0.0	
7	Appliance Package			0.0		
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	gn 1,061 sq.ft
Classification Sn	on Small Dwelling Unit
Notes	es

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
208A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
208B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Overhe	ad Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	C	0
				C	Overhead	Glazing A	Area We	eighted U			

Vertical Glazing Schedule Rows to Show								ws to Show	3	
Plan	Component		Glazing		Wic	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1 2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	3	6	47.3	14.18
2 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
						Sum	of Area	a and UA	101.3	30.4
					Vertical (Glazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

Vertical Glazing and Doors Area Weighted U
--

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	No ceiling/roof in thermal envelope	NA	-			0.0
	·			Sum of Area and UA	0	0.0

١	Walls (Above Grade)								
	Plan	Component		Wall					
	ID	Description	Ref.	U		Net Area	UA		
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,401	76		
Γ									
Γ									
Γ									
					Sum of Area and UA	1,401	76		

Floor (ov	er crawl or exterior)						
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
	No floors in thermal envelope	NA	-			0	
				Sum of Area and UA	0	0]

:	Slab on G	arade (less than 2 feet below grade)						
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		No slab on grade	NA	-			0	
	Sum of Perimeter and Fi						0	

E	Below Grade Walls and Slabs									
	Plan	Component		Wall	Wall	Wall	Slab		Slab	
	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
										1
										1
										1
	Sum of Area, Length and L					0.0		0	0	5

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System	ibution System Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards/						
Is this a hydronic heating system?	No						
Location of Ducts	Unducted						
Location of Air Handler	Conditioned Space						
Is Duct Testing Required? No							

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	ction Affidavit, Existing	
New Construct	ction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,061 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,019 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	118
Envelope Heat Load Sum of UA X ΔT	6,019 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,967 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,987 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,987 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	13,734 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 301	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.64, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1106 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

RESULTS - Comparison of Baseline and Proposed Design Component Performance, R occupancies		Baseline			Pr	oposed Desig	In	
Component Performance, R occupancies	U	Area	UA		U		UA	
	-	40	12.0	Г	0.300	40		
Doors U =	0.300	40		-	0.300	40		
Overhead Glazing U =	0.500	0	0.0	-		0	0.0	
Vertical Glazing U =	0.300	128	38.3		0.300	128		
Flat/Vaulted Ceilings U =	0.027	1,106	29.9	_	0.027	1,106	29.9	
Wall (above grade) U =	0.056	1,322	74.0		0.054	1,322	71.4	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	0	0.0			0	0.0	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0	-		0	0.0	
				-				
	Baseli	ne UA Total	154.1		Propo	sed UA Total	151.5	
	Required Credits 4.5					osed Credits	6.5	from Tables 406.2 and 406.3
UA Percent Reduction						1.7%		
					ι	JA Reduction	2.6	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 406 are ≥ those required in Section R406, then the home meets the WSEC.								

Table R4	Table R406.2 Fuel Normalization Credits								
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)				
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5				

Table R406.3 Energy Credits									
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*			
1	Efficient Building Envelope				0.0				
2	Air Leakage Control and Efficient Ventilation				0.0				
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas			
4	High Efficiency HVAC Distribution System				NA				
5.1	Efficient Water Heating				0.0				
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater			
6	Renewable Electric Energy	kWh			0.0				
7	Appliance Package				0.0				
				Energy Credits	5.5				

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	1,106 sq. ft	
Classification Sma	II Dwelling Unit	
Notes		

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
301A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
301B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Are	a and UA	40	12.0
					Exterior	Doors A	Area We	ighted U		0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	5
				c	verhead (Glazing /	Area We	eighted U			

Plan	Component		Glazing		Wid	ith	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
6	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	2	0	12.0	3.60
						Sum	of Area	a and UA	127.5	38.3
					Vertical C	Glazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	iahted U		0.300

Flat/Vau	Ited Ceilings					
Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		1,106	29.9
	·			Sum of Area and UA	1,106	29.9

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,322	71

Floor (ov	er crawl or exterior)						
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
	No floors in thermal envelope	NA	-			0	
				Sum of Area and UA	0	0	

	Slab on G	arade (less than 2 feet below grade)						
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
ł		No slab on grade	NA	-			0	
ł								
					Sum of Perimeter and FP	0	0	1

Below Gr	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
Sum of Area, Length and UA 0 0.0 0 0									

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy.	wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Conditioned Space	
Is Duct Testing Requi	ed? No	

inks to Download Forms, Checklists and Other Resources	Link		
Compliance Certificate	Compliance Certificate	Instructions	
Insulation Certificate for Residential New Construction	Insulation Certificate		
Duct Testing Affadavits			
Existing Cons	struction Affidavit, Existing		
New Cons	struction Affidavit, New		
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist		
Alterations (Remodel) Worksheet	Worksheet		

Heating System Sizing - Proposed Design Try C	Dut BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,106 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,401 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	151
Envelope Heat Load Sum of UA X ∆T	7,726 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	5,178 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,904 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,904 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	16,130 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 302	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.83, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1061 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pro	posed Desig	jn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	89	26.8	0.300	89	26.8	
Flat/Vaulted Ceilings U =	0.027	1,061	28.6	0.027	1,061	28.6	
Wall (above grade) U =	0.056	1,413	79.1	0.054	1,413	76.3	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	146.5	Propo	sed UA Total	143.7	
	Requ	ired Credits	4.5	Propo	osed Credits	6.5	from Tables 406.2 and 40
				UA Perce	nt Reduction	1.9%	
				u	A Reduction	2.8	

Table R	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating	ating				
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	1	kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	gn 1,061 sq. ft
Classification	on Small Dwelling Unit
Notes	es

Exterior	Doors									
Plan	Component		Door		Wio	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
302A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
302B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Are	a and UA	40	12.0
					Exterior	r Doors A	Area We	ighted U		0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Area	a and UA	0	0	5
				c	Overhead	Glazing /	Area We	ighted U			

Plan	Component		Glazing		Width Height					
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1 2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	3	6	47.3	14.18
2 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3 6	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	2	0	12.0	3.60
Sum of Area and UA								89.3	26.8	
Vertical Glazing Area Weighted U								0.300		
				Vertical G	lazing and	Doors A	rea We	iahted U		0.300

ID Description Ref. U Area UA R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4) 10-7 0.027 1,061 28.6 ID ID ID ID ID ID ID ID 10.027 ID	Plan	Component		Attic		
R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4) 10-7 0.027 Image: Comparison of the com	ID	Description	Ref.	U	Area	UA
		R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027	1,061	28.6

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,413	76
				Sum of Area and UA	1,413	76

Floor (over crawl or exterior)									
Plan	Component		Floor			UA			
ID	Description	Ref.	U		Area				
	No floors in thermal envelope	NA	-			0			
Sum of Area and UA									

	Slab on Grade (less than 2 feet below grade)									
	Plan	Component		Slab						
	ID	Description	Ref.	F		Slab Perim	FP			
i I		No slab on grade	NA	-			0			
-			Sum of Perimeter and FP	0	0					

Below Grade Walls and Slabs									
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
								1	
Sum of Area, Length and UA					0.0		0	0	<u>,</u>

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standar							
Is this a hydronic heating system?	No						
Location of Ducts	Unducted						
Location of Air Handler	Conditioned Space						
Is Duct	Is Duct Testing Required? No						

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	ction Affidavit, Existing	
New Construct	ction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Y Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,061 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,019 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	144
Envelope Heat Load Sum of UA X ΔT	7,330 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,967 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,297 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,297 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	15,372 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 303	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.57, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1007 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline			Pr	oposed Desig	gn	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0	-		0	0.0	
Vertical Glazing U =	0.300	78	23.4		0.300	78	23.4	
Flat/Vaulted Ceilings U =	0.027	1,007	27.2		0.027	1,007	27.2	
Wall (above grade) U =	0.056	1,285	71.9		0.054	1,285	69.4	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	0	0.0			0	0.0	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
	Baseli	ne UA Total	134.5		Propo	sed UA Total	132.0	
	Requi	ired Credits	4.5		Prop	osed Credits	6.5	from Tables 406.2 and
					UA Perce	nt Reduction	1.9%	
					ι	A Reduction	2.6	

Table R4	Table R406.2 Fuel Normalization Credits								
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)				
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5				

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation			0.0		
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System			NA		
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy		kWh		0.0	
7	Appliance Package			0.0		
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	1,007	sq. ft			
Classification Small Dwelling Unit					
Notes					

Exterior	Doors									
Plan	Component		Door		Wio	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
303A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
303B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Are	a and UA	40	12.0
					Exterior	r Doors A	Area We	ighted U		0.300

Overhea	d Glazing		Clasing		Wie	141-	Г п.			
ID	Component Description	Ref.	Glazing U	Qt.	Feet	Inch	Feet	lnch	Area	UA
									0	
									0	
									0	
									0	
									0	
Sum of Area and U.								a and UA	0	0
Overhead Glazing Area Weighted U										

Vertical	Glazing Schedule							Ro	ws to Show	2
Plan	Component		Glazing		Wie	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
2 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
Sum of Area and UA 78.0									23.4	
					Vertical	Glazing (area We	inhted II		0 300

Vertical Glazing and Doors Area Weighted U

0.300

Flat/Vaulted Ceilings								
Plan	Component		Attic					
ID	Description	Ref.	U		Area	UA		
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		1,007	27.2		
				Sum of Area and UA	1,007	27.2		

Walls (Above Grade) Plan ID Component Wall Description Ref. U Net Area UA 10-5 0.054 1,285 R21 cavity+R0 foam INT 2X6W Lap (Code Baseline) 69 Sum of Area and UA 1,285 69

Floor (over crawl or exterior)									
	Plan	Component		Floor			UA		
	ID	Description	Ref.	U		Area			
		No floors in thermal envelope	NA	-			0		
	Sum of Area and UA 0 0								
								•	

S	Slab on Grade (less than 2 feet below grade)									
	Plan	Component		Slab						
	ID	Description	Ref.	F		Slab Perim	FP			
		No slab on grade	NA	-			0			
	Sum of Perimeter and FP 0 0									

Below Grade Walls and Slabs									
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
Sum of Area, Length and UA				0	0.0		0	0	

Ventilation Requirements		
Number of Bedrooms	2	
Run-Time Percent in Each 4-Hour Segment	100%	
Is the system Balanced?	Balanced	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403	
Whole House Mechanical Ventilation Airflow Rate	70 CFM	

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.	energy.wsu.edu/Documents/Duct%20Testing%20Standards%20				
Is this a hydronic heating system?	No					
Location of Ducts	Unducted					
Location of Air Handler	Conditioned Space					
Is Duct Testing Required? No						

inks to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Constru	uction Affidavit, Existing	
New Constru	uction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool							
Nearest Weather Station	Puyallup							
Indoor Design Temperature	70 F							
Outdoor Design Temperature	19 F							
Design Temperature Difference (∆T)	51 F							
Conditioned Floor Area, Proposed Design								
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,560 ft3							
HVAC System Type	Heat Pump							
Location of HVAC Distribution System	Unducted							
Sum of UA, including exempt door and window	132							
Envelope Heat Load Sum of UA X ∆T	6,730 Btu / Hour							
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,715 Btu / Hour							
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,444 Btu / Hour							
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,444 Btu / Hour							
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1								
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,305 Btu / Hour							
Building and Duct Heat Loss X 1.40 for all other systems								

Project Information	Messages / Results *
East Town Crossing, Unit # 304	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.73, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 976 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline			Pro	oposed Desig	n	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0	0.3	300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	70	20.9	0.	300	70	20.9	
Flat/Vaulted Ceilings U =	0.027	976	26.4	0.	027	976	26.4	
Wall (above grade) U =	0.056	1,366	76.5	0.	054	1,366	73.8	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	0	0.0			0	0.0	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
	Baseli	ne UA Total	135.8		Propo	sed UA Total	133.1	
	Requi	ired Credits	4.5		Propo	osed Credits	6.5	from Tables 406.2 and
	U	A Perce	nt Reduction	2.0%				
					U	A Reduction	2.7	

Table R4	Table R406.2 Fuel Normalization Credits										
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)						
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5						

Table R4	106.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh			0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	976 sq. ft							
Classification Small Dwelling Unit								
Notes								

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
304A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
304B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	Area We	ighted U		0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
Sum of Area and UA											
Overhead Glazing Area Weighted U											

Plan	Component		Glazing		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	3	6	15.8	4.73
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
Sum of Area and UA							69.8	20.9		
Vertical Glazing Area Weighted U									0.300	
Vertical Glazing and Doors Area Weighted U										0.300

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		976	26.4
				Sum of Area and UA	976	26.4

Walls (Above Grade)											
	Plan	Component		Wall							
	ID	Description	Ref.	U		Net Area	UA				
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,366	74				
Γ											
Γ											
					Sum of Area and UA	1,366	74				

	Floor (over crawl or exterior)										
	Plan	Component		Floor			UA				
	ID	Description	Ref.	U		Area					
		No floors in thermal envelope	NA	-			0				
ľ											
		0	0								

:	Slab on G	irade (less than 2 feet below grade)						
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		No slab on grade	NA	-			0	
			•		Sum of Perimeter and FP	0	0	

Below Gr	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum	of Area, Ler	ngth and UA	0	0.0		0	0	,

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	55 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy	.wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Conditioned Space	
Is Duct 7	Testing Required? No	

inks to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	tion Affidavit, Existing	
New Construct	tion <u>Affidavit, New</u>	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Y Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	976 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,296 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	133
Envelope Heat Load Sum of UA X ΔT	6,786 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,569 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,355 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,355 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,194 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 305	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.57, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? Occupancy Type? Code Version? WSEC 2018

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1007 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	gn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	78	23.4	0.300	78	23.4	
Flat/Vaulted Ceilings U =	0.027	1,007	27.2	0.027	1,007	27.2	
Wall (above grade) U =	0.056	1,285	71.9	0.054	1,285	69.4	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	134.5	Propo	sed UA Total	132.0	
	Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2
				UA Perce	ent Reduction	1.9%	
					JA Reduction	2.6	

Table R4	Table R406.2 Fuel Normalization Credits								
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)				
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5				

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	ł	kWh		0.0	
7 Appliance Package					0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	1,007	sq. ft	
Classification	Small Dwellin	g Unit	
Notes			

Exterior	Doors									
Plan	Component		Door		Wio	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
305A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
305B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Are	a and UA	40	12.0
					Exterior	r Doors A	Area We	ighted U		0.300

	d Glazing									
Plan ID	Component Description	Ref.	Glazing U	Qt.	Wid Feet	ith Inch	Feet	lnch	Area	UA
	Description	Rei.	U	હા.	reet		reel		Alea	UA
									0	
									0	
									0	
									0	
Sum of Area and UA 0 0										
Overhead Glazing Area Weighted U										

Vertical Glazing Schedule Rows to Show								2			
	Plan	Component		Glazing		Wie	dth	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
	Exempt			-						-	-
1	1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
2	3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
Sum of Area and UA 78.0 23						23.4					
Vertical Glazing Area Weighted U 0.300											
					Vertical G	lazing and	Doors A	rea We	ighted U		0.300

Flat/Vault	ted Ceilings	Т	1		
Plan	Component		Attic		
ID	Description	Ref.	U	Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027	1,007	27.2

27.2 Sum of Area and UA 1,007

Walls (Above Grade)						
Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,285	69
Sum of Area and UA 1.285 69						

Floor (ov	er crawl or exterior)						
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
	No floors in thermal envelope	NA	-			0	
				Sum of Area and UA	0	0	

Sla	Slab on Grade (less than 2 feet below grade)							
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		No slab on grade	NA	-			0	
	Sum of Perimeter and FP 0 0							

Below Grade Walls and Slabs									
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
Sum of Area, Length and UA 0 0.0 0 0									

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System	Download RS-33 (2018	Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%2				
Is this a hydronic heating system?	No					
Location of Ducts	Unducted					
Location of Air Handler	Conditioned Space					
Is Duct Testing Required? No						

inks to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	fi2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,560 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	132
Envelope Heat Load Sum of UA X ΔT	6,730 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,715 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,444 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,444 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,305 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 306	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.73, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 976 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	gn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	70	20.9	0.300	70	20.9	
Flat/Vaulted Ceilings U =	0.027	976	26.4	0.027	976	26.4	
Wall (above grade) U =	0.056	1,366	76.5	0.054	1,366	73.8	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ine UA Total	135.8	Propo	sed UA Total	133.1	
	Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 a
				UA Perce	nt Reduction	2.0%	
				L L	JA Reduction	2.7	

Table R4	Table R406.2 Fuel Normalization Credits											
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)							
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5							

Table R4	06.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System			NA	
5.1	Efficient Water Heating			0.0	
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh		0.0	
7	Appliance Package			0.0	
			Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	976 sq. ft								
Classification Small Dwelling Unit									
Notes									

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
306A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
306B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Are	a and UA	40	12.0
					Exterior	Doors A	Area We	ighted U		0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
Sum of Area and UA											
Overhead Glazing Area Weighted											

Vertical Glazing Schedule Ro										
Plan	Component		Glazing		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
2 2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	3	6	15.8	4.73
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Are	a and UA	69.8	20.9
					Vertical 0	Glazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		976	26.4
				Sum of Area and UA	976	26.4

١	Walls (Above Grade)											
	Plan	Component		Wall								
	ID	Description	Ref.	U		Net Area	UA					
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,366	74					
Γ												
Γ												
					Sum of Area and UA	1,366	74					

	Floor (ov	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
		No floors in thermal envelope	NA	-			0	
ľ								
		0	0					

:	Slab on Grade (less than 2 feet below grade)												
	Plan	Component		Slab									
	ID	Description	Ref.	F		Slab Perim	FP						
		No slab on grade	NA	-			0						
			Sum of Perimeter and FP	0	0								

Bel	low Gr	ade Walls and Slabs								
F	Plan	Component		Wall	Wall	Wall	Slab		Slab	
	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
		Sum	of Area, Ler	ngth and UA	0	0.0		0	0	J

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	55 CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy	.wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Conditioned Space	
Is Duct 7	Testing Required? No	

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	ction Affidavit, Existing	
New Construct	ction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: <u>https://betterbuiltnw.com/resources/hvac-sizing-tool</u>	
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (∆T)	51 F	
Conditioned Floor Area, Proposed Design	976 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,296 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	133	
Envelope Heat Load Sum of UA X ∆T	6,786 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	4,569 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,355 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,355 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,194 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing, Unit #307	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.64, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? New Construction Occupancy Type? Code Version? WSEC 2018

R2 Multifamily Classification: Small Dwelling Unit -- 1105 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

RESULTS - Comparison of Baseline and Proposed Design		Deseline			Pr	oposed Desig	<u></u>	
Component Performance, R occupancies	U	Baseline	UA		U		UA	
Г	-	Area		г	-			
Doors U =	0.300	40	12.0	_	0.300	40		
Overhead Glazing U =	0.500	0	0.0	_		0	0.0	
Vertical Glazing U =	0.300	130	38.9		0.300	130	38.9	
Flat/Vaulted Ceilings U =	0.027	1,105	29.8		0.027	1,105	29.8	
Wall (above grade) U =	0.056	1,320	73.9		0.054	1,320	71.3	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	0	0.0			0	0.0	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
				_				
	Baseli	ne UA Total	154.6		Propo	sed UA Total	151.9	
	Requ	ired Credits	4.5		Prop	osed Credits	6.5	rom Tables 406.2 and 406.3
					UA Perce	nt Reduction	1.7%	
					ι	IA Reduction	2.6	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	6 are ≥ thos	se required in S	Section R40	6, then the home m	neets the WSE	.		

Table R4	06.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	High Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System	cy HVAC Distribution System			NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy kWh		kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	1,105	sq. ft	
Classification	Small Dwelling	g Unit	
Notes			

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
307A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
307B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	Area We	ighted U		0.300

Overhea	d Glazing										
Plan	Component		Glazing		Wie	ith	Н	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	D
				c	verhead (Glazing A	Area We	eighted U			

Plan	Component		Glazing		Wic	ith	He	ight		ł
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
7	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
						Sum	of Area	a and UA	129.5	38.9
					Vertical C	Glazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	iahted U		0.300

Flat/Va	ulted Ceilings					
Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		1,105	29.8
				Sum of Area and UA	1,105	29.8

	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
F	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,320	71

	Floor (ov	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
		No floors in thermal envelope	NA	-			0	
ľ								
					Sum of Area and UA	0	0	

	Slab on G	irade (less than 2 feet below grade)						
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
ł		No slab on grade	NA	-			0	
					Sum of Perimeter and FP	0	0	1

Below Gra	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum	of Area, Ler	igth and UA	0	0.0		0	0	

Ventilation Requirements			
Number of Bedrooms	3		
Run-Time Percent in Each 4-Hour Segment	100%		
Is the system Balanced?	Balanced		Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed		Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	403	
Whole House Mechanical Ventilation Airflow Rate	70	CFM	

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy.	wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Conditioned Space	
Is Duct Testing Requ	lired? No	

Compliance Certificate Compliance Certificate Instructions Insulation Certificate for Residential New Construction Insulation Certificate Instructions Duct Testing Affadavits Existing Construction Affidavit, Existing New Construction Affidavit, New
Duct Testing Affadavits Existing Construction Affidavit, Existing
Existing Construction Affidavit, Existing
New Construction Affidavit, New
Prescriptive Checklist for 2018 WSEC Prescriptive Checklist
Alterations (Remodel) Worksheet Worksheet

Heating System Sizing - Proposed Design Try C	Dut BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,105 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,393 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	152
Envelope Heat Load Sum of UA X ∆T	7,749 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	5,173 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,923 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,923 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	16,153 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing, Unit # 308	
Building E	
Pioneer & Shaw, Puyallup	UA Reduction = 2.8, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

 What code compliance pathway are you using?
 Prescriptive Path Compliance with Option 1 (preferred)
 Project Building Type? Occupancy Type? Code Version? WSEC 2018

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1061 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	jn 🛛
	U	Area	UA	U	Area	UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	101	30.4	0.300	101	30.4
Flat/Vaulted Ceilings U =	0.027	1,061	28.6	0.027	1,061	28.6
Wall (above grade) U =	0.056	1,401	78.5	0.054	1,401	75.7
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0
	Baseli	ne UA Total	149.5	Propo	sed UA Total	146.7
	Requ	ired Credits	4.5	Prop	osed Credits	6.5
				UA Perce	nt Reduction	1.9%
				L. L.	JA Reduction	2.8

Table R4	106.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	5.5	6.5

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation				0.0	
3	gh Efficiency HVAC			Option 3.6	3.0	Ductless Split System with no electric resistance in primary living areas
4	High Efficiency HVAC Distribution System	ciency HVAC Distribution System			NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	enewable Electric Energy		kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	5.5	

*Refer to WSEC 2018 Table R406.3 for complete option descriptions and requirements

Conditioned Floor Area, Proposed Design	gn 1,061 sq.ft
Classification Sn	on Small Dwelling Unit
Notes	es

Exterior	Doors									
Plan	Component		Door		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
308A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
308B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Overhe	ad Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Area	a and UA	0	0	D
				C	verhead (Glazing A	Area We	ighted U			

Vertical	Glazing Schedule		-					Ro	ws to Show	3
Plan	Component		Glazing		Wic	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1 2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	3	6	47.3	14.18
2 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
Sum of Area and I									101.3	30.4
Vertical Glazing Area Weight										0.300
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

Flat/Vaul	Ited Ceilings					
Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		1,061	28.6
				Sum of Area and UA	1,061	28.6

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,401	76
	·			Sum of Area and UA	1,401	76

	Floor (ove	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
		No floors in thermal envelope	NA	-			0	
Ĩ								
					Sum of Area and UA	0	0	

	Slab on G	arade (less than 2 feet below grade)						
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		No slab on grade	NA	-			0	
_					Sum of Perimeter and FP	0	0	

	Below Gr	ade Walls and Slabs								
	Plan	Component		Wall	Wall	Wall	Slab		Slab	
	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
Ī										1
Γ										1
Γ										
	Sum of Area, Length and UA				0	0.0		0	0	,

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

HVAC Thermal Distribution System	http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20		
Is this a hydronic heating system?	No		
Location of Ducts	Unducted		
Location of Air Handler	Conditioned Space		
Is Duct Testing Required? No			

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	tion Affidavit, Existing	
New Construct	tion <u>Affidavit, New</u>	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,061 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,019 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	147
Envelope Heat Load Sum of UA X ∆T	7,480 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,967 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,448 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,448 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	15,560 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	