



Project Inform	nation
E	ast Town Crossing Unit 101
В	Juilding C
P	ioneer & Shaw, Puyallup
Contact Inforn	nation
S	Synthesis 9, LLC
В	rett Lindsay
<u>b</u> l	lindsay@synthesis9.com
2	53-468-4117

UA Reduction = 2.63, Proposed UA is better than baseline by 1%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1150 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 De	sign	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300		12.0	
Overhead Glazing U =	0.500	0	0.0			0.0	
Vertical Glazing U =	0.300	143	42.8	0.300	1	43 42.8	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0.0	
Wall (above grade) U =	0.056	1,314	73.6	0.054	1,3	14 71.0	
Floors over Crawlspace U =	0.029	0	0.0			0.0	
Slab on Grade F =	0.540	148	79.9	0.540	1	48 79.9	
Below Grade Wall U =	0.042	0	0.0			0.0	
Below Grade Slab F =	0.570	0	0.0			0.0	
		_					
	Baseli	ine UA Total	208.3	Pi	oposed UA To	al 205.6	
	Requ	ired Credits	4.5	F	roposed Credi	s 7.0	from Tables 406.2 and 406.
		_		UA P	ercent Reduction	n 1.3%	
					UA Reduction	on 2.6	
ne Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40							

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	6.0	7.0		

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

THERMAL	ENVEL	OPE DE	TAILS - P	Proposed	Design



Conditioned Floor Area, Proposed Design 1,150 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wid	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	verhead (Glazina A	rea We	iahted U		

٧	ertical (Glazing Schedule							Ro	ws to Show	4	J
	Plan	Component		Glazing		Wic	ith	He	ight			
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
Ш	Exempt			-						-	-	
1 1		U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	5	0	90.0	27.00	
2 2		U=0.30 (Code Baseline)	Table 406.2	0.30	1	3	0	5	0	15.0	4.50	
3 4		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00	
4 5		U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25	
							Sum	of Area	a and UA	142.5	42.8	
						Vertical C	Glazing A	Area We	ighted U		0.300	
					Vertical G	lazing and	Doors A	Area We	ighted U		0.300	
												Ĭ.

FI	at/Vault	ted Ceilings						
	Plan	Component		Attic				
	ID	Description	Ref.	U		Area	UA	
		No ceiling/roof in thermal envelope	NA	-			0.0	
П								
П								
					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		1,314	71
				Sum of Area and UA	1,314	71

Floor (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		148	80	
				Sum of Perimeter and FP	148	80	

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 U				0	0.0		0	0	

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	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	Unconditioned Space	
Is Duct Testing Require	i? No	

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

eating 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	1,150 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,775 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	206
Envelope Heat Load Sum of UA X AT	10,487 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	5,384 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	15,871 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	15,871 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	19,839 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information				
	East Town Crossing Unit 102			
	Building C			
	Pioneer & Shaw, Puyallup			
Contact Info	Contact Information			
	Synthesis 9, LLC			
	Brett Lindsay			
	blindsay@synthesis9.com			
	253-468-4117			

UA Reduction = 2.76, Proposed UA is better than baseline by 1%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1075 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			Pro	posed Desig	ın	
	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	120	36.0		0.300	120	36.0	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,378	77.2		0.054	1,378	74.4	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	152	82.1		0.540	152	82.1	
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	ine UA Total	207.2		Propos	sed UA Total	204.5	
	Requ	ired Credits	4.5		Propo	sed Credits	7.0	from Tables 406.2 and 406.3
		_			UA Percei	nt Reduction	4.00/	
					U	A Reduction	2.8	
If the Drangerd LIA C the Torget LIA and the Drangerd Credite from Toble 40	OF are > that	aa raasiirad im	Coation D40	C than the hame most	to the WCEC			
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	o are ≥ tnos	se requirea in	Section R40	b, then the nome meet	ts the WSEC	•		

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	6.0	7.0		

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65		
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.			
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	6.0			

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



Conditioned Floor Area, Proposed Design 1,075 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wid	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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 A	rea We	iahted U		

Vertical	I Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt	t		-						-	1
1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	5	0	60.0	18.00
2	U=0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
						Sum	of Area	and UA	120.0	36.0
					Vertical G	lazing A	rea Wei	ighted U		0.300
Vertical Glazing and Doors Area Weighted U 0.300										

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								

Plan	Component		Wall					
ID	Description	Ref.	U		Net Area	UA		
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,378	74		
Sum of Area and UA 1,378 74								

	Floor (over 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		152	82		
Sum of Perimeter and FP								

Below G	Below Grade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum	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?	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	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	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	Unconditioned 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 Constructi		
New Constructi	ion Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	<u>Worksheet</u>	

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	1,075 ft2
Conditioned Volume	9,138 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	204
Envelope Heat Load Sum of UA X ΔT	10,429 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	5,033 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	15,462 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	15,462 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	19,328 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Info	rmation
	East Town Crossing Unit 103
	Building C
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	252 469 4117

UA Reduction = 2.58, Proposed UA is better than baseline by 1%

 $Whole \ House \ Mechanical \ Ventilation \ Airflow \ Rate: \ 70 \ CFM \ with \ Run \ Time \ Percent \ of \ 100\%, \ Balanced, \ Distributed$

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1055 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	n	
	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	90	27.0	0.300	90	27.0	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,291	72.3	0.054	1,291	69.7	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	141	76.1	0.540	141	76.1	
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	187.4	Propos	sed UA Total	184.9	
	Requ	ired Credits	4.5	Propo	sed Credits	7.0	from Tables 406.2 and 406
		_		UA Percei	nt Reduction	1.4%	
				U	A 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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

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



Conditioned Floor Area, Proposed Design 1,055 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wid	lth	He	ight		
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 Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	verhead (Glazina A	rea We	iahted U		

١	/ertical	Glazing Schedule							Ro	ws to Show	2	
	Plan	Component		Glazing		Wic	lth	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	5	0	60.0	18.00	
2	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	90.0	27.0	
						Vertical (Slazing 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
	No ceiling/roof in thermal envelope	NA	-		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	1,291	70

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	i	
		R10 2' vertical (Code Baseline)	10-2	0.540		141	76		
ſ									
ſ									
ı					Sum of Perimeter and FP	141	76		
					·				

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.energ	y.wsu.edu/Documents/Duct%20Testing%20Standards%20
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Unconditioned Space	
Is Duc	ct Testing Required? No	

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	<u>Instructions</u>
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	

yearm enamed a respectation and the	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	1,055_ ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,968 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	185
Envelope Heat Load Sum of UA X ΔT	9,428 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	4,939 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	14,367 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	14,367 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	17,959 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information	
East Town Crossing Unit 10	4
Building C	
Pioneer & Shaw, Puyallup	
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	
252 469 4117	

UA Reduction = 2.66, Proposed UA is better than baseline by 1%

 $Whole \ House \ Mechanical \ Ventilation \ Airflow \ Rate: 55 \ CFM \ with \ Run \ Time \ Percent \ of \ 100\%, \ Balanced, \ Distributed$

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 986 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			Pro	posed Desig	ın	
	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	75	22.5		0.300	75	22.5	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,329	74.4		0.054	1,329	71.8	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	143	77.2		0.540	143	77.2	
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	186.2		Propo	sed UA Total	183.5	
	Requ	ired Credits	4.5		Propo	sed Credits	7.0	from Tables 406.2 and 406.3
		_			UA Percei	nt Reduction	4 407	
					U	A Reduction	2.7	
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	6.0	7.0				

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	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65				
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.				
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	6.0				

THERMAL ENVELOPE DETAILS - Proposed Design		
I REKINAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 986 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wid	ith	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	Overhead (

Plan	Component		Glazing		Wid	lth	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-							-
2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	3	0	5	0	45.0	13.50
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
						Sum	of Area	and UA	75.0	22.5
					Vertical G	Slazing A	rea We	ighted U		0.300
Vertical Glazing and Doors Area Weighted U							rea We		0.300	

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

ID Description Ref. U Net Are R21 cavity+R0 foam INT 2X6W Lap (Code Baseline) 10-5 0.054 1,3	
R21 cavity+R0 foam INT 2X6W Lap (Code Baseline) 10-5 0.054 1,3	
	<mark>29</mark> 72

FI	loor (ove	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
			<u> </u>		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	
		R10 2' vertical (Code Baseline)	10-2	0.540		143	77	
L								
_					Sum of Perimeter and FP	143	77	
					•			

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	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.v	wsu.edu/Documents/Duct%20Testing%20Standards%20					
Is this a hydronic heating system?	No						
Location of Ducts	Unducted						
Location of Air Handler	Unconditioned 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 Constru	ction Affidavit, Existing	
New Constru	ction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design	ry 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	986_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,381 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 ΔT	9,359 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	4,616 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,975 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,975 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	17,469 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Info	rmation
	East Town Crossing Unit 105
	Building C
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	252 469 4117

UA Reduction = 2.58, Proposed UA is better than baseline by 1%

 $Whole \ House \ Mechanical \ Ventilation \ Airflow \ Rate: \ 70 \ CFM \ with \ Run \ Time \ Percent \ of \ 100\%, \ Balanced, \ Distributed$

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1055 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

ESULTS - Comparison of Baseline and Proposed Design								
Component Performance, R occupancies		Baseline				posed Desig		
	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	90	27.0		0.300	90	27.0	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,291	72.3		0.054	1,291	69.7	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	141	76.1		0.540	141	76.1	
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	ine UA Total	187.4		Propo	sed UA Total	184.9	
	Requ	ired Credits	4.5		Propo	sed Credits	7.0	rom Tables 406.2 and 406.3
		_			UA Perce	nt Reduction	1.4%	
					ι	A Reduction	2.6	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	n6 are > thos	se required in	Section R40	6 then the home me	eets the WSF			

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

THERMAL ENVELOPE DETAILS - Proposed Design		
I REKINAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 1.055 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wid	lth	He	ight		
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 Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	verhead (Glazina A	rea We	iahted U		

١	Vertical Glazing Schedule Rows to Show 2											
Plan Component			Glazing		Width		Height					
	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	5	0	60.0	18.00	
2	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	90.0	27.0	
Vertical Glazing Area Weighted U								0.300				
					Vertical G	lazing and	Doors A	rea We	ighted U		0.300	

Plan	Component		Attic		
ID	Description	Ref.	U	Area	UA
	No ceiling/roof in thermal envelope	NA	-		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	1,291	70

FI	Floor (over 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		141	76			
				Sum of Perimeter and FP	141	76			

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, Len	gth 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?	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	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	Unconditioned Space						
Is Duct Testing Required? No							

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

Heating System Sizing - Proposed Design	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 (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1,055_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,968 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	185
Envelope Heat Load Sum of UA X ΔT	9,428 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X	4,939 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	14,367 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	14,367 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	17,959 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Info	rmation				
	East Town Crossing Unit 106				
	Building C				
	Pioneer & Shaw, Puyallup				
Contact Information					
	Synthesis 9, LLC				
	Brett Lindsay				
	blindsay@synthesis9.com				
	253-468-4117				

UA Reduction = 2.56, Proposed UA is better than baseline by 1%

Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

* 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?
Project Building Type?
Occupancy Type?
Code Version?
Classification:
Baseline Description:
About Your Selection:

What code compliance pathway are you using?
Prescriptive Path Compliance with Option 1 (preferred)
New Construction
R2 Multifamily
WSEC 2018
Small Dwelling Unit -- 986 sq. ft.
Code Baseline - Baseline and proposed window areas are equal.
Up to 15 sf exempt window and 24 sf exempt door allowable

RESULTS - Comparison of Baseline and Proposed Design									
Component Performance, R occupancies		Baseline			Pro	posed Desig	ın		
	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	120	36.0		0.300	120	36.0		
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0		
Wall (above grade) U =	0.056	1,282	71.8		0.054	1,282	69.2		
Floors over Crawlspace U =	0.029	0	0.0			0	0.0		
Slab on Grade F =	0.540	143	77.2		0.540	143	77.2		
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	197.0		Propo	sed UA Total	194.4		
	Requ	ired Credits	4.5		Propo	sed Credits	7.0	rom Tables 406.2 and 406.3	
		_			UA Percei	nt Reduction	4.00/		
					U	A 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	6.0	7.0						

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

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

THERMAL ENVELOPE DETAILS - Proposed Design		
I REKINAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 986 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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										

٧	/ertical (Glazing Schedule							Ro	ws to Show	2	
	Plan	Component		Glazing		Wic	lth	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	6	0	5	0	90.0	27.00	
2 4		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00	
Sum of Area and UA 120.0 36.0												
						Vertical (Slazing 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
	No ceiling/roof in thermal envelope	NA	-		0.0

ID Description Ref. U	Net Area	UA
R21 cavity+R0 foam INT 2X6W Lap (Code Baseline) 10-5 0.054		0.7
	1,282	69

FI	Floor (over 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 ID	Component Description	Ref.	Slab F		Slab Perim	FP		
	R10 2' vertical (Code Baseline)	10-2	0.540		143			
				Sum of Perimeter and FP	143	77		

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

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Whole-House Ventilation'
Is the system Distributed?	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	Unconditioned Space					
Is Duct Testing Required? No						

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

ating 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	986_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,381 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	194
Envelope Heat Load Sum of UA X ΔT	9,917 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	4,616 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	14,533 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	14,533 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	18,166 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Inform	mation
	East Town Crossing Unit 107
	Building C
	Pioneer & Shaw, Puyallup
Contact Infor	rmation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	252 469 4117

UA Reduction = 2.6, Proposed UA is better than baseline by 1%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1149 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	158	47.3	0.300	158	47.3	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,299	72.7	0.054	1,299	70.1	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	148	79.9	0.540	148	79.9	
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	211.9	Propo	sed UA Total	209.3	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0	from Tables 406.2 and 406.3
		<u> </u>		UA Perce	nt Reduction	1.2%	
					JA Reduction	2.6	
roposed UA ≤ the Target UA, and the Proposed Credits from Table 40				 			

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

IERMAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 1,149 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	verhead (Glazina A	rea We	iahted U		

Vertical Glazing Schedule Rows to Show 4							4					
PI	lan	Component		Glazing		Wid	lth	Не	eight			
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
Exe	empt			-						-	-	
1 1	U=(0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	5	0	90.0	27.00	
2 2	U=(0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00	
3 4	U=(0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00	
4 5	U=(0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25	
							Sum	of Area	a and UA	157.5	47.3	
Vertical Glazing Area Weighted U 0.300												
					Vertical G	lazing and	Doors A	Area We	ighted U		0.300	

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							

Plan	Component		Wall				
ID	Description	Ref.	U		Net Area	UA	
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,299	70	
Sum of Area and UA 1,299 70							

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



Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	R10 2' vertical (Code Baseline)	10-2	0.540		148	80	
				Sum of Perimeter and FP	148	80	

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	3	
Run-Time Percent in Each 4-Hour Segment	100%	
Is the system Balanced?	Verify system meets definition of 'Balanced Whole-House Ventilation'	
Is the system Distributed?	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	Unconditioned Space					
Is Duct Testing Required?	No					

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

leating 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	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,767 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	209
Envelope Heat Load Sum of UA X AT	10,675 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	5,379 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	16,055 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	16,055 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	20,068 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information					
East Town Crossing Uni	108				
Building C					
Pioneer & Shaw, Puyallu	p				
Contact Information					
Synthesis 9, LLC					
Brett Lindsay					
blindsay@synthesis9.co	<u>m</u>				
252 469 4117					

UA Reduction = 2.58, Proposed UA is better than baseline by 1%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1075 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			Pro	posed Desig	ın	
	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	210	63.0		0.300	210	63.0	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,288	72.1		0.054	1,288	69.6	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	152	82.1		0.540	152	82.1	
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	ine UA Total	229.2		Propo	sed UA Total	226.6	
	Requ	ired Credits	4.5		Propo	sed Credits	7.0	from Tables 406.2 and 406.3
			<u> </u>		UA Percei	nt Reduction	4 407	
					U	A Reduction	2.6	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	06 are ≥ tho	se required in	Section R40	6, then the home me	ets the WSEC).		

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

THERMAL ENVELOPE DETAILS - Proposed Design		
I REKINAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 1,075 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

et Inch	Feet	Inch	Area	UA
			0	
			0	
			0	
			0	
			0	
Sum	of Area	and UA	0	0
	Sum	Sum of Area	Sum of Area and UA	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Plan	Component		Glazing		Wid	th	He	ight		
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	2	6	0	5	0	60.0	18.00
2	U=0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00
4	U=0.30 (Code Baseline)	Table 406.2	0.30	4	6	0	5	0	120.0	36.00
						Sum	of Area	and UA	210.0	63.0
					Vertical C	lazing 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
	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		1,288	70
				Sum of Area and UA	1,288	70

Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
				Sum of Area and UA	0	0	



Slab on G	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		152	82	
				Sum of Perimeter and FP	152	82	

Below G	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	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?	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section 403
Whole House Mechanical Ventilation Airflow Rate	70 CFM

Download RS-33 (2018) http://www.ene	ergy.wsu.edu/Documents/Duct%20Testing%20Standards%20_
No	
Unducted	
Unconditioned Space	
quired? No	
	No Unducted Unconditioned Space

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 Constructi	ion Affidavit, Existing	
New Constructi	ion Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	<u>Worksheet</u>	

ystem 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	1,075 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,138 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	227
Envelope Heat Load Sum of UA X AT	11,558 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X Δ T) X 018))	5,033 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	16,591 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	16,591 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	20,739 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Infor	mation
	East Town Crossing Unit 201
	Building C
	Pioneer & Shaw, Puyallup
Contact Info	rmation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	253_468_4117

UA Reduction = 2.63, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1150 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	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	158	47.3		0.300	158	47.3	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,314	73.6		0.054	1,314	71.0	
Floors over Crawispace 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	132.8		Propo	sed UA Total	130.2	
	Requ	ired Credits	4.5		Prop	osed Credits	7.0	from Tables 406.2 and 406.3
		_			UA Perce	nt Reduction	0.00/	
					ι	JA Reduction	2.6	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	06 are ≥ tho	se required in	Section R40	6, then the home n	neets the WSE	э.		

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

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



Conditioned Floor Area, Proposed Design 1,150 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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										
				c	Overhead (

ı	Plan	Component		Glazing		Wid	th	He	ight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
	Exempt										-
1 1	1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	5	0	90.0	27.00
2 2	2	U=0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00
3 4	4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
4 5	5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
							Sum	of Area	a and UA	157.5	47.3
Vertical Glazing Area Weighted U 0.300											
Vertical Glazing and Doors Area Weighted U 0.300						azing and					

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,314	71
				Sum of Area and UA	1,314	71

Floor (o	ver 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 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	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Whole-House Ventilation'
Is the system Distributed?	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.v	vsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Unconditioned Space	
Is Duct Testing Required?	No	

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	<u>Instructions</u>
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	tion Affidavit, Existing	
New Construct	tion 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 (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1,150 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,775 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	130
Envelope Heat Load Sum of UA X AT	6,641 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	5,384 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,025 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,025 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	15,031 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information		
Ea	ast Town Crossing Unit 202	
Bu	uilding C	
Pic	oneer & Shaw, Puyallup	
Contact Inform	ation	
Sy	rnthesis 9, LLC	
Br	ett Lindsay	
bli	ndsay@synthesis9.com	
25	2 460 4117	

UA Reduction = 2.73, Proposed UA is better than baseline by 2%

 $Whole \ House \ Mechanical \ Ventilation \ Airflow \ Rate: \ 70 \ CFM \ with \ Run \ Time \ Percent \ of \ 100\%, \ Balanced, \ Distributed$

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1075 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	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	135	40.5	0.300	135	40.5	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,363	76.3	0.054	1,363	73.6	
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	128.8	Prop	osed UA Total	126.1	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0	from Tables 406.2 and 406.3
		_		UA Perc	ent Reduction	0.40/	
					UA 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	6.0	7.0					

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

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



Conditioned Floor Area, Proposed Design 1,075 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wid	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

et Inch	Feet	Inch	Area	UA
			0	
			0	
			0	
			0	
			0	
Sum	of Area	and UA	0	0
	Sum	Sum of Area	Sum of Area and UA	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	5	0	90.0	27.00
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	3	0	5	0	15.0	4.50
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
						Sum	of Area	and UA	135.0	40.5
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	ighted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,363	74
						_
				Sum of Area and UA	1,363	74

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

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.er	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	Unconditioned Space						
Is Duct Testing F	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 Construc	ction Affidavit, Existing	
New Construc	ction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

stem 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	1,075 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,138 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	126
Envelope Heat Load Sum of UA X AT	6,431 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	5,033 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,464 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,464 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	14,330 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Info	Project Information					
	East Town Crossing Unit 203					
	Building C					
	Pioneer & Shaw, Puyallup					
Contact Info	ormation					
	Synthesis 9, LLC					
	Brett Lindsay					
	blindsay@synthesis9.com					
	253-468-4117					

UA Reduction = 2.62, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1055 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				oposed Desig		
	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	90	27.0		0.300	90	27.0	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,311	73.4		0.054	1,311	70.8	
Floors over Crawispace 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	112.4		Propo	sed UA Total	109.8	
	Requ	ired Credits	4.5		Prop	osed Credits	7.0	from Tables 406.2 and 406.3
		<u> </u>			UA Perce	nt Reduction	0.00/	
					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 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	6.0	7.0				

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	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65				
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.				
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	6.0				

THERMAL ENVELOPE DETAILS - Proposed Design	



Conditioned Floor Area, Proposed Design 1.055 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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 Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	Overhead (

Vertical Glazing Schedule Rows to Show 2												
	Plan	Component		Glazing		Wic	lth	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	5	0	60.0	18.00	
2	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	90.0	27.0	
						Vertical (Slazing A	rea We	ighted U		0.300	
Vertical Glazing and Doors Area Weighted U 0.300												

Plan	Component		Attic		
ID	Description	Ref.	U	Area	UA
	No ceiling/roof in thermal envelope	NA	-		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	1,311	71

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	
Sum of Area, Length and U			igth 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	V	'erify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	V	'erify 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.v	wsu.edu/Documents/Duct%20Testing%20Standards%20
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Unconditioned Space	
Is Duct Testing Requi	ired? 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 Construc	ction Affidavit, Existing	
New Construc	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 (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1,055_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,968 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	110
Envelope Heat Load Sum of UA X AT	5,599 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	4,939 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,539 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,539 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	13,173 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information	
East Town Crossing Unit 204	
Building C	
Pioneer & Shaw, Puyallup	
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	
253-468-4117	

UA Reduction = 2.71, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1005 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	ın	
	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	90	27.0		0.300	90	27.0	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,353	75.8		0.054	1,353	73.1	
Floors over Crawispace 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	114.8		Propo	sed UA Total	112.1	
	Requ	ired Credits	4.5		Prop	osed Credits	7.0 f	rom Tables 406.2 and 406.3
		_			UA Perce	nt Reduction	0.40/	
					ι	JA Reduction	2.7	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	06 are ≥ thos	se required in	Section R40	6, then the home me	ets the WSE	3 .		

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

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



Conditioned Floor Area, Proposed Design 1,005 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	verhead (Glazina A	rea We	iahted U		

Vertical	I Glazing Schedule							Ro	ws to Show	3
Plan	lan Component		Glazing	Glazing		Width		ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt	t								-	1
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
2	U=0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
						Sum	of Area	and UA	90.0	27.0
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	iahted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,353	73
				Sum of Area and UA	1,353	73

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	
	No slab on grade	NA				0	
				Sum of Perimeter and FP	0	0	

Below G	rade 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	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	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	Unconditioned Space	
Is	Duct Testing Required? No	

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

ystem 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	1,005 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8, 543 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	112
Envelope Heat Load Sum of UA X AT	5,715 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X Δ T) X .018))	4,705 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,420 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,420 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	13,025 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Info	rmation
	East Town Crossing Unit 205
	Building C
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	253_468_4117

UA Reduction = 2.58, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1055 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

Doors U = 0.300 40 12.0 0.300 40 12.0 0.300 40 12.0 0.300 40 12.0 0.300 40 12.0 0.300 40 12.0 0.300 0.				ign	oposed Desi	Pr		Baseline		Component Performance, R occupancies
Overhead Glazing U = 0.500 0.500 0.0 0.0 0.00				UA	Area	U	UA	Area	U	
Vertical Glazing U = 0.300 90 27.0 Flat/Vaulted Ceilings U = 0.027 0 0.0 Wall (above grade) U = 0.056 1,291 72.3 Floors over Crawlspace U = 0.029 0 0.0 Sab on Grade F = 0.540 0 0.0 Below Grade Wall U = 0.042 0 0.0 Below Grade Slab F = 0.570 0 0.0			12.0	0	40	0.300	12.0	40	0.300	Doors U =
Flat/Vaulted Ceilings U = 0.027 0 0.0 Wall (above grade) U = 0.056 1,291 72.3 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 Below Grade Slab F = 0.570 0 0.0			0.0	0	(0.0	0	0.500	Overhead Glazing U =
Wall (above grade) U = 0.056 1,291 72.3 0.054 1,291 69.7 Floors over Crawlspace U = 0.029 0 0.0 0 0 0.0 Slab on Grade F = 0.540 0 0.0 0 0 0.0 Below Grade Wall U = 0.042 0 0.0 0 0 0.0 Below Grade Slab F = 0.570 0 0.0 0 0 0.0			27.0	0	90	0.300	27.0	90	0.300	Vertical Glazing U =
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 Below Grade Slab F = 0.570 0 0.0			0.0	0	0		0.0	0	0.027	Flat/Vaulted Ceilings U =
Slab on Grade F = 0.540 0 0.0 Below Grade Wall U = 0.042 0 0.0 Below Grade Slab F = 0.570 0 0.0			69.7	1	1,291	0.054	72.3	1,291	0.056	Wall (above grade) U =
Below Grade Wall U = 0.042 0 0.0 Below Grade Slab F = 0.570 0 0.0 0 0.0 0 0.0			0.0	0	C		0.0	0	0.029	Floors over Crawlspace U =
Below Grade Slab F = 0.570 0 0.0 0.0			0.0	0	C		0.0	0	0.540	Slab on Grade F =
			0.0	0	C		0.0	0	0.042	Below Grade Wall U =
Baseline UA Total 111.3 Proposed UA Total 108.7			0.0	0	0		0.0	0	0.570	Below Grade Slab F =
Baseline UA Total 111.3 Proposed UA Total 108.7								_		
			108.7	al	sed UA Tota	Propo	111.3	ine UA Total	Basel	
Required Credits 4.5 Proposed Credits 7.0 from Tables 406	06.2 and 406.3	rom Tables 406.2 ar	7.0 f	3	osed Credits	Prop	4.5	ired Credits	Requ	
UA Percent Reduction 2.3%				n	nt Reduction	UA Perce		_		
UA Reduction 2.6			2.6	n	JA Reduction	ı				

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

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



Conditioned Floor Area, Proposed Design 1,055 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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 Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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

Plan	Component		Glazing		Wid	lth	He	ight		
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	5	0	60.0	18.00
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	90.0	27.0
					Vertical C	Slazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	iahted U		0.300

Plan	Component		Attic		
ID	Description	Ref.	U	Area	UA
	No ceiling/roof in thermal envelope	NA	-		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	1,291	70

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								

	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									
ı										

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	d Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	on 403
Whole House Mechanical Ventilation Airflow Rate	70	O CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energ	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	Unconditioned Space					
Is Duc	ct 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 Construc	ction Affidavit, Existing	
New Construc	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 (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1,055_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,968 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	109
Envelope Heat Load Sum of UA X AT	5,544 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	4,939 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,484 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,484 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	13,105 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Info	rmation
	East Town Crossing Unit 206
	Building C
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	253-468-4117

UA Reduction = 2.71, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1005 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

Doors U = Overhead Glazing U = Vertical Glazing U = Flat/Vaulted Ceillings U = Wall (above grade) U = Floors over Crawlspace U =	0.300 0.027 0.056	40 0 90 0 1,353	12.0 0.0 27.0 0.0 75.8		0.300 0.300	40 0 90	12.0 0.0 27.0	
Overhead Glazing U = Vertical Glazing U = Flat/Vaulted Ceilings U = Wall (above grade) U =	0.500 0.300 0.027 0.056	0 90 0	0.0 27.0 0.0			0	0.0	
Vertical Glazing U = Flat/Vaulted Ceilings U = Wall (above grade) U =	0.300 0.027 0.056	0	27.0 0.0		0.300	90		
Flat/Vaulted Ceilings U = Wall (above grade) U =	0.027 0.056	0	0.0		0.300	90	27.0	
Wall (above grade) U =	0.056	0 1,353				_		
		1,353	75.8			0	0.0	
Floors over Crawlspace U =			10.0		0.054	1,353	73.1	
	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	114.8		Propo	sed UA Total	112.1	
	Requ	ired Credits	4.5		Propo	osed Credits	7.0	from Tables 406.2 and 406.
		_			UA Perce	nt Reduction	2.4%	
					ι	JA Reduction	2.7	
	Below Grade Slab F =	Below Grade Slab F = 0.570 Basel Requ	Below Grade Slab F = 0.570 0 Baseline UA Total Required Credits	Baseline UA Total 114.8 Required Credits 4.5	Baseline UA Total 114.8 Required Credits 4.5	Below Grade Slab F = 0.570 0 0.0	Below Grade Slab F = 0.570 0 0.0 0 0	Baseline UA Total 114.8 Proposed UA Total 112.1 Required Credits 4.5 UA Percent Reduction 2.4%

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	6.0	7.0					

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	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65					
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.					
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	6.0					

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



Conditioned Floor Area, Proposed Design 1,005 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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	I Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt	t								-	1
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
2	U=0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
						Sum	of Area	and UA	90.0	27.0
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	iahted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,353	73
				Sum of Area and UA	1,353	73

Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
	No floors in thermal envelope	NA	-			0	
				Sum of Area and UA	0	0	

2



Slab on G	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	

Ве	low 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, 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 Ve	erify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	erify 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.er	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	Unconditioned Space						
Is Duct Testing F	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 Construc	ction Affidavit, Existing	
New Construc	ction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

leating System Sizing - Proposed Design	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 (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1,005 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,543 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	112
Envelope Heat Load Sum of UA X aT	5,715 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	4,705 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,420 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,420 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	13,025 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Infor	mation
	East Town Crossing Unit 207
	Building C
	Pioneer & Shaw, Puyallup
Building C	
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	253_468_4117

UA Reduction = 2.6, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1149 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	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	158	47.3		0.300	158	47.3	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,299	72.7		0.054	1,299	70.1	
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	132.0		Propo	sed UA Total	129.4	
	Requ	ired Credits	4.5		Prop	osed Credits	7.0	rom Tables 406.2 and 406.3
		_			UA Perce	nt Reduction	0.00/	
					ι	JA Reduction	2.6	
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 me	ets the WSE	Э.		

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

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



Conditioned Floor Area, Proposed Design 1,149 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	verhead (Glazina A	rea We	iahted U		

Vertical	Glazing Schedule							Ro	ws to Show	4	
Plan	Component		Glazing		Wid	lth	Не	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	3	6	0	5	0	90.0	27.00	
2 2	U=0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00	
3 4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00	
4 5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25	
						Sum	of Area	a and UA	157.5	47.3	
					Vertical C	Slazing A	Area We	ighted U		0.300	
				Vertical G	lazing and	Doors A	Area We	ighted U		0.300	
					_						

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,299	70
				Sum of Area and UA	1,299	70

Floor (d	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 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	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Whole-House Ventilation'
Is the system Distributed?	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.energ	v.wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Unconditioned Space	
I	Duct Testing Required? No	

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

leating 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	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,767 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	129
Envelope Heat Load Sum of UA X AT	6,599 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	5,379 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,979 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,979 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	14,973 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information				
	East Town Crossing Unit 208			
	Building C			
	Pioneer & Shaw, Puyallup			
Contact Info	ormation			
	Synthesis 9, LLC			
	Brett Lindsay			
	blindsay@synthesis9.com			
	253-468-4117			

UA Reduction = 2.73, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1075 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	135	40.5		0.300	135	40.5	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,363	76.3		0.054	1,363	73.6	
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	128.8		Propo	sed UA Total	126.1	
	Requ	ired Credits	4.5		Prop	osed Credits	7.0	from Tables 406.2 and 406.
		_			UA Perce	nt Reduction	2.1%	
					ı	JA Reduction	2.7	
ne Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40								

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	6.0	7.0	

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	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65	
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.	
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	6.0		

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

THERMAL ENVELOPE DETAILS - Proposed Design	



	Conditioned Floor Area, Proposed Design 1,075 sq. ft						
Classification Small Dwelling Unit							
	Notes						

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U	•	0.300

Plan	Component		Glazing		Wid	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
				c	Overhead (

Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exem	pt								-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	5	0	90.0	27.00
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	3	0	5	0	15.0	4.50
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
						Sum	of Area	and UA	135.0	40.5
					Vertical G	lazing A	rea Wei	ghted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	ghted U		0.300

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							

Plan	Component		Wall					
ID	Description	Ref.	U		Net Area	UA		
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,363	74		
Sum of Area and UA 1,363 74								

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	1	
		No slab on grade	NA	-			0		
			Sum of Perimeter and FP	0	0				

Below G	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?	Verify system meets definition of 'Balanced Whole-H	ouse Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-	House Ventilation'
Ventilation Code Section	MC, Section 403	
Whole House Mechanical Ventilation Airflow Rate	70 CFM	

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.er	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	Unconditioned Space							
Is Duct Testing Required? No								

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

eating 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 (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,075_ ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,138 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	126	
Envelope Heat Load Sum of UA X ΔT	6,431 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	5,033 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,464 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,464 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	14,330 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		



Project Info	rmation
	East Town Crossing Unit 301
	Building C
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	052,400,4447

UA Reduction = 2.33, Proposed UA is better than baseline by 1%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1151 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		F	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	158	47.3	0.300	158	47.3	
Flat/Vaulted Ceilings U =	0.027	1,151	31.1	0.027	1,151	31.1	
Wall (above grade) U =	0.056	1,167	65.4	0.054	1,167	63.0	
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	155.7	Prop	osed UA Total	153.3	
	Requ	ired Credits	4.5	Pro	posed Credits	7.0	from Tables 406.2 and 406.3
		_		UA Pero	ent Reduction	4 =0/	
					UA Reduction	2.3	

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

THERMAL ENVELOPE DETAILS - Proposed Design		
I REKINAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 1,151 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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 Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	Overhead (

ı	Plan	Component		Glazing		Wid	th	He	ight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
	Exempt										-
1 1	1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	5	0	90.0	27.00
2 2	2	U=0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00
3 4	4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
4 5	5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
							Sum	of Area	a and UA	157.5	47.3
						Vertical C	Slazing A	rea We	ighted U		0.300
					Vertical G	azing 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		1,151	31.1
				Sum of Area and UA	1,151	31.1

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,167	63
Sum of Area and UA						

Floor (over crawl or exterior)								
1	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 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	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced Whole-House Ventilation'
Is the system Distributed?	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.v	wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Unconditioned Space	
Is Duct Testing Required?		

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

leating 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	1,151_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,784 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	153
Envelope Heat Load Sum of UA X AT	7,821 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	5,389 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,209 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,209 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	16,512 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Inform	nation
ı	East Town Crossing Unit 302
1	Building C
	Pioneer & Shaw, Puyallup
Contact Infor	mation
;	Synthesis 9, LLC
1	Brett Lindsay
1	blindsay@synthesis9.com
	253-468-4117

UA Reduction = 2.45, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1075 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

ESULTS - Comparison of Baseline and Proposed Design					D.	oposed Desig	<u> </u>	
Component Performance, R occupancies		Baseline					·	
-	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	135	40.5		0.300	135	40.5	
Flat/Vaulted Ceilings U =	0.027	1,075	29.0		0.027	1,075	29.0	
Wall (above grade) U =	0.056	1,226	68.7		0.054	1,226	66.2	
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	150.2		Propo	sed UA Total	147.7	
	Requ	ired Credits	4.5		Prop	osed Credits	7.0	rom Tables 406.2 and 406.3
		_			UA Perce	nt Reduction	4.00/	
						JA Reduction		
						A INCUUCTION	2.0	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	06 are ≥ thos	se required in	Section R40	6, then the home n	neets the WSE	3.		

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	6.0	7.0					

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	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

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

THERMAL ENVELOPE DETAILS - Proposed Design	



Conditioned Floor Area, Proposed Design 1.075 sq. ft						
Classification Small Dwelling Unit						
Notes						

Plan	Component		Door		Wic	lth	He	ight		
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 Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	Overhead (

Vertical Glazing Schedule Rows to Show 3									3	
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt	t		-						-	1
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	5	0	90.0	27.00
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	3	0	5	0	15.0	4.50
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
						Sum	of Area	and UA	135.0	40.5
					Vertical C	lazing A	rea Wei	ighted 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		1,075	29.0
		_	l .	Sum of Area and UA	1,075	29.0

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,226	66
				Sum of Area and UA	1,226	66

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 G	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?	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	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	r.wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Unconditioned Space	
Is		

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	tion Affidavit, Existing	
New Construc	tion 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 (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1,075 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,138 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	148
Envelope Heat Load Sum of UA Χ ΔΤ	7,534 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) ΧΔΤ) Χ.018))	5,033 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,567 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,567 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	15,709 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Info	rmation
	East Town Crossing Unit 303
	Building C
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	253_468_4117

UA Reduction = 2.33, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1055 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			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	90	27.0		0.300	90	27.0	
Flat/Vaulted Ceilings U =	0.027	1,055	28.5		0.027	1,055	28.5	
Wall (above grade) U =	0.056	1,164	65.2		0.054	1,164	62.9	
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	L		0	0.0	
		_						
	Baseli	ine UA Total	132.7		Propo	sed UA Total	130.3	
	Requ	ired Credits	4.5		Propo	sed Credits	7.0	rom Tables 406.2 and 406.3
		<u>-</u>			UA Percei	nt Reduction	4.00/	
					U	A Reduction	2.3	
Kill B			0					
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	of are ≥ thos	se required in	Section R40	6, then the home m	eets the WSEC			

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	6.0	7.0

Table R4	06.3 Energy Credits				
Option No.	Category	Select Options			Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation	r Leakage Control and Efficient Ventilation		1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

IERMAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 1.055 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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 Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	verhead (Glazina A	rea We	iahted U		

Vertical Glazing Schedule Rows to Show ₂											
	Plan	Component		Glazing		Wic	ith	He	ight		
	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	5	0	60.0	18.00
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 90.0						27.0					
Vertical Glazing Area Weighted U 0.300											
					Vertical G	lazing and	Doors A	Area 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		1,055	28.5
				Sum of Area and UA	1,055	28.5

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
F	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,164	63

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 FF								

Plan	Component		Wall	Wall	Wall	Slab		Slab
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA
	Sum	gth 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.v	wsu.edu/Documents/Duct%20Testing%20Standards%20			
Is this a hydronic heating system?	No				
Location of Ducts	Unducted				
Location of Air Handler	Unconditioned 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 Constru	ction Affidavit, Existing	
New Constru	ction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

ating 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	1,055_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,968 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	130
Envelope Heat Load Sum of UA X ΔT	6,647 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	4,939 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,587 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,587 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	14,483 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information				
	East Town Crossing Unit 304			
	Building C			
	Pioneer & Shaw, Puyallup			
Contact Info	ormation			
	Synthesis 9, LLC			
	Brett Lindsay			
	blindsay@synthesis9.com			
	052,400,4447			

UA Reduction = 2.44, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1005 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

		Baseline		PI	oposed Desig	n	
	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	90	27.0	0.300	90	27.0	
Flat/Vaulted Ceilings U =	0.027	1,005	27.1	0.027	1,005	27.1	
Wall (above grade) U =	0.056	1,221	68.4	0.054	1,221	65.9	
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	132.1	
	Requ	ired Credits	4.5	Propo	sed Credits	7.0	from Tables 406.2 and 406.
		<u>-</u>		UA Perce	nt Reduction	4 00/	
				ι	A Reduction	2.4	

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

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



Conditioned Floor Area, Proposed Design 1,005 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

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

Vertical	I Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt	t								-	1
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
2	U=0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
						Sum	of Area	and UA	90.0	27.0
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	iahted 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		1,005	27.1
				Sum of Area and UA	1,005	27.1

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,221	66
				Sum of Area and UA	1,221	66

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	
	No slab on grade	NA				0	
				Sum of Perimeter and FP	0	0	

Below G	rade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum	gth 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?	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	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	r.wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Unconditioned Space	
Is	Ouct Testing Required? No	

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

ystem 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	1,005 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8, 543 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 AT	6,736 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X \(0.18 \))	4,705 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,441 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,441 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	14,301 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information	
East Town Crossing Unit 305	
Building C	
Pioneer & Shaw, Puyallup	
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	
050 400 4447	

UA Reduction = 2.33, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1055 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

ESULTS - Comparison of Baseline and Proposed Design		Danalina			Dr	oposed Desig	n e	
Component Performance, R occupancies		Baseline			υ			
r -	U	Area	UA	-		Area	UA	
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	90	27.0		0.300	90	27.0	
Flat/Vaulted Ceilings U =	0.027	1,055	28.5		0.027	1,055	28.5	
Wall (above grade) U =	0.056	1,165	65.2		0.054	1,165	62.9	
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	132.7		Propo	sed UA Total	130.4	
	Requ	ired Credits	4.5		Prop	osed Credits	7.0	from Tables 406.2 and 406.3
		<u> </u>			UA Perce	nt Reduction	4.007	100.2 4.14 100.0
						JA Reduction	2.3	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	06 are ≥ thos	se required in	Section R40	6, then the home m	neets the WSE	Э.		

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

IERMAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 1,055 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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 Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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										
				c	verhead (Glazina A	rea We	iahted U		

Vertical Glazing Schedule Rows to Show 2											
	Plan	Component		Glazing		Wic	ith	He	ight		
	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	5	0	60.0	18.00
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 90.0 27.0											
Vertical Glazing Area Weighted U 0.300											
					Vertical G	lazing and	Doors A	Area 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		1,055	28.5
				Sum of Area and UA	1,055	28.5

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,165	63

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	
						•	

Plan	nde Walls and Slabs Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
Sum of Area, Length and U			gth 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 Whole-House Ventilation'
Is the system Distributed?	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.v	wsu.edu/Documents/Duct%20Testing%20Standards%20
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Unconditioned Space	
Is Duct Testing Requi	ired? 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 Constru	ction Affidavit, Existing	
New Constru	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 (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1,055_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,968 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	130
Envelope Heat Load Sum of UA X AT	6,650 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta \) X \(\Delta \	4,939 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,589 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,589 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	14,487 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information		
	East Town Crossing Unit 306	
	Building C	
	Pioneer & Shaw, Puyallup	
Contact Info	ormation	
	Synthesis 9, LLC	
	Brett Lindsay	
	blindsay@synthesis9.com	
	050 400 4447	

UA Reduction = 2.44, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction Programme Technology
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1005 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

ESULTS - Comparison of Baseline and Proposed Design Component Performance, R occupancies		Baseline			Pr	oposed Desig	ın	
Component Performance, & occupancies	U	Area	UA		U	Area	UA	
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	90	27.0		0.300	90	27.0	
Flat/Vaulted Ceilings U =	0.027	1,005	27.1		0.027	1,005	27.1	
Wall (above grade) U =	0.056	1,221	68.4		0.054	1,221	65.9	
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	L		0	0.0	
		ine UA Total	134.5		•	sed UA Total		
	Requ	ired Credits	4.5		Prop	osed Credits		from Tables 406.2 and 406.3
					UA Perce	nt Reduction	1.8%	
					ι	JA Reduction	2.4	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	6 are > thos	se required in	Section R40	6 than the home m	eets the WSF	•		

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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

IERMAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 1,005 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wid	lth	He	ight		
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 Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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 A	rea We	iahted U		

Totalour Stating Contours						ws to Show	3			
Plan Cor	Component		Glazing	lazing		Width		ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt	t								-	1
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
2	U=0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
						Sum	of Area	and UA	90.0	27.0
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	iahted 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		1,005	27.1
				Sum of Area and UA	1,005	27.1

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,221	66
				Sum of Area and UA	1,221	66

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	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 Ve	erify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	erify 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.er	nergy.wsu.edu/Documents/Duct%20Testing%20Standards%20_
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Unconditioned Space	
Is Duct Testing F	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 Construc	ction Affidavit, Existing	
New Construc	ction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

ystem 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	1,005 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8, 543 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 AT	6,736 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X \(0.18 \))	4,705 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,441 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,441 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	14,301 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Info	rmation
	East Town Crossing Unit 307
	Building C
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	252 469 4117

UA Reduction = 2.33, Proposed UA is better than baseline by 1%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1149 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

ESULTS - Comparison of Baseline and Proposed Design		D P			Dr	oposed Desig	ın	
Component Performance, R occupancies		Baseline				•	<i>*</i>	
	U	Area	UA	r	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	158	47.3		0.300	158	47.3	
Flat/Vaulted Ceilings U =	0.027	1,149	31.0		0.027	1,149	31.0	
Wall (above grade) U =	0.056	1,166	65.3		0.054	1,166	63.0	
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	155.6		Propo	sed UA Total	153.2	
	Requ	ired Credits	4.5		Prop	sed Credits	7.0	from Tables 406.2 and 406.3
		<u> </u>			UA Perce	nt Reduction	4 =0/	
					ι	JA Reduction	2.3	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	06 are ≥ thos	se required in	Section R40	6. then the home m	neets the WSE	3.		

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	6.0	7.0				

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.	
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	6.0	

IERMAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 1,149 sq. ft						
Classification Small Dwelling Unit						
Notes						

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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 A	rea We	iahted U		

	Plan	Component		Glazing		Wid	lth	He	ight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
ш	xempt			-							-
1		U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	5	0	90.0	27.00
2		U=0.30 (Code Baseline)	Table 406.2	0.30	2	3	0	5	0	30.0	9.00
4		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
5		U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
Sum of Area and UA 157.5 47.3											
						Vertical C	Slazing A	rea Wei	ighted U		0.300
					Vertical G	lazing and	Doors A	rea Wei	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		1,149	31.0
				Sum of Area and UA	1,149	31.0

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,166	63
Sum of Area and UA 1,166 63						

Floor (d	loor (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 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	3	
Run-Time Percent in Each 4-Hour Segment	100%	
Is the system Balanced?	Verify system meets definition of 'Balanced Whole-House Ventilation'	
Is the system Distributed?	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	Unconditioned Space					
Is Duct Testing Required? No						

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

eating 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	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,767 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	153
Envelope Heat Load Sum of UA X ΔT	7,815 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	5,379 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,194 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,194 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	16,493 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Inform	nation
E	ast Town Crossing Unit 308
В	Building C
P	Pioneer & Shaw, Puyallup
Contact Inform	nation
S	Synthesis 9, LLC
В	Brett Lindsay
<u>b</u>	lindsay@synthesis9.com
2	E2 460 4447

UA Reduction = 2.45, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed

* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction Programme Technology
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1075 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

ESULTS - Comparison of Baseline and Proposed Design								
Component Performance, R occupancies		Baseline				oposed Desig	ın	
	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	135	40.5		0.300	135	40.5	
Flat/Vaulted Ceilings U =	0.027	1,075	29.0		0.027	1,075	29.0	
Wall (above grade) U =	0.056	1,226	68.7		0.054	1,226	66.2	
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	150.2		Propo	sed UA Total	147.7	
	Requ	ired Credits	4.5		Prop	osed Credits	7.0 f	from Tables 406.2 and 406.3
		_			UA Perce	nt Reduction	1.6%	
					ι	JA Reduction	2.5	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	06 are ≥ thos	se required in	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	6.0	7.0

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		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
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	6.0	

THERMAL ENVELOPE DETAILS - Proposed Design		
I REKINAL ENVELOPE DETAILS - Proposed Design		



Conditioned Floor Area, Proposed Design 1,075 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wic	lth	He	ight		
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	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wid	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
				c	verhead (Glazina A	rea We	iahted U		

Vertical	Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt	t		-						-	1
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	5	0	90.0	27.00
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	3	0	5	0	15.0	4.50
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	5	0	30.0	9.00
						Sum	of Area	and UA	135.0	40.5
					Vertical C	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	iahted 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		1,075	29.0
		_	l .	Sum of Area and UA	1,075	29.0

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,226	66
				Sum of Area and UA	1,226	66

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	
	No slab on grade	NA				0	
				Sum of Perimeter and FP	0	0	

Belo	Below Grade Walls and Slabs									
PI	lan	Component		Wall	Wall	Wall	Slab		Slab	
- 1	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?	Verify system meets definition of 'Balanced Whole-Hous	se Ventilation'
Is the system Distributed?	Distributed Verify system meets definition of 'Distributed Whole-Ho	use Ventilation'
Ventilation Code Section	MC, Section 403	
Whole House Mechanical Ventilation Airflow Rate	70 CFM	

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

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 Constructi	on Affidavit, Existing	
New Constructi	on Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	<u>Worksheet</u>	

eating 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 (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,075_ ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	9,138 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	148	
Envelope Heat Load Sum of UA X AT	7,534 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta \) X .018))	5,033 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,567 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,567 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	15,709 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		