Project Info	rmation
	East Town Crossing Unit 101
	Building A
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	253-468-4117

Messages / Results *

UA Reduction = 2.39, 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?
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 -- 819 sq. ft.
Code Baseline - Baseline and proposed window areas are equal.
Up to 15 sf exempt window and 24 sf exempt door allowable

SULTS - Comparison of Baseline and Proposed Design Component Performance, R occupancies		Baseline			Dr	posed Desig	ın	
Component Performance, R occupancies	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	$\overline{}$	
Overhead Glazing U =	0.500	0	0.0	_	0.000	0	0.0	
Vertical Glazing U =	0.300	111	33.3		0.300	111	33.3	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,196	67.0		0.054	1,196	64.6	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	133	72.0		0.540	133	72.0	
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	184.3		Propo	sed UA Total	181.9	
	Requi	ired Credits	4.5		Prop	osed Credits	5.5 f	rom Tables 406.2 and 406.3
					UA Perce	nt Reduction	1.3%	
					ι	A Reduction	2.4	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	6 ara > thos	se required in	Section P40	6 than the home me	ate the WSE			

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	4.5	5.5

Table R4	106.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.4	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	4.5	

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

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design 819 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	th	Не	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 C	lazing A	rea We	ighted U		

	lan	Glazing Schedule Component		Glazing		Wid	4h	LI o	ight	ws to Show	3
	ID I	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
_	empt	Description	IXEI.	-	Qt.	1 661		1 661		-	-
2	ι	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
4	l	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
7	l	U=0.30 (Code Baseline)	Table 406.2	0.30	3	5	0	4	6	67.5	20.25
							Sum	of Area	and UA	111.0	33.3
						Vertical G	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		1,196	65
				Sum of Area and UA	1,196	65

	Floor (ov	er crawl or exterior)						
	Plan	Component Description		Floor			UA	
	ID	Description	Ref.	U		Area		
1								
					Sum of Area and UA	0	0	

	rade (less than 2 feet below grade)						
Plan ID	Component Description	Ref.	Slab		Slab Perim	FP	
	R10 2' vertical (Code Baseline)	10-2	0.540		133		
	,						
				Sum of Perimeter and FP	133	72	

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?	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 E	Ouct Testing Required? No	

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

ystem Sizing - Proposed Design Try Nearest Weather Station	Direction
	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	819 ft2
Conditioned Volume	6,962 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	182
Envelope Heat Load Sum of UA X ΔT	9,275 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X Δ T) X .018))	3,834 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,109 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,109 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	16,387 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

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

Messages / Results *

UA Reduction = 2.22, Proposed UA is better than baseline by 1%

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

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 779 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	134	40.1	0.300	134	40.1	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,109	62.1	0.054	1,109	59.9	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	127	68.6	0.540	127	68.6	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baselii	ne UA Total	182.7	Propos	sed UA Total	180.5	
	Requi	ired Credits	4.5	Propo	sed Credits	5.5	from Tables 406.2 and 406.3
		_		UA Percei	nt Reduction	1.2%	
				U	A Reduction	2.2	

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	4.5	5.5

Table R4	106.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.4	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	4.5	

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

HERMAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 779 sq. ft	
Classification Small Dwelling Unit	
Notes	

Plan	Component		Door		Wid	lth	He	ight		ĺ
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

Overhead Glazing											
Plan	Component		Glazing		Wid	lth	Н	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	0
				c	overhead (Slazing A	rea We	ighted U			

Plan	Component		Glazing		Wid	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10
7	U=0.30 (Code Baseline)	Table 406.2	0.30	2	5	0	4	6	45.0	13.50
8	U=0.30 (Code Baseline)	Table 406.2	0.30	3	3	0	6	0	54.0	16.20
						Sum	of Area	a and UA	133.5	40.1
					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		1,109	60
				Sum of Area and UA	1,109	60

Floor (over crawl or exterior)							
Plan	Component		Floor			UA	
ID	Component 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		127	69		
				Sum of Perimeter and FP	127	69		

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 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 Tes	sting Required? No	

ks 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 Constr	ruction Affidavit, Existing	
New Constr	ruction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

ng 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	779 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,622 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	181
Envelope Heat Load Sum of UA X AT	9,207 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X	3,647 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,854 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,854 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	16,067 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing Unit 103 Building A Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com 253-468-4117

Messages / Results *

UA Reduction = 2.41, Proposed UA is better than baseline by 1%

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

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 819 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline			Prop	posed Desig	n	
	U	Area	UA	U	J ,	Area	UA	
Doors U =	0.300	40	12.0	0.30	00	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	104	31.1	0.30	00	104	31.1	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,203	67.4	0.0	54	1,203	65.0	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	133	72.0	0.54	40	133	72.0	
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	182.4		Propos	ed UA Total	180.0	
	Requ	ired Credits	4.5		Propos	sed Credits	5.5	from Tables 406.2 and 406.3
		_		UA	Percent	t Reduction	1.3%	
					UA	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	4.5	5.5

Table R4	106.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.4	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	4.5	

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

THERMAL ENVELOPE DETAILS - Proposed Design	

Conditioned Floor Area, Proposed Design 819 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

Overhea	d Glazing										
Plan	Component		Glazing		Wid	lth	Н	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	0
				c	overhead (Slazing A	rea We	ighted U			

	Vertical	Glazing Schedule							Ro	ws to Show	2	
	Plan	Component		Glazing		Wid	lth	He	eight			
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
	Exempt			-						-	١	
1	2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80	
2	7	U=0.30 (Code Baseline)	Table 406.2	0.30	3	5	0	4	6	67.5	20.25	
							Sum	of Are	a and UA	103.5	31.1	
						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

Walls	Above Grade)						
Plar	Component		Wall				
ID	Description	Ref.	U		Net Area	UA	
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,203	65	,
	·			Sum of Area and UA	1,203	65	,

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

lan ID	Component Description	Ref.	Slab		Slab Perim	FP
			•			
	R10 2' vertical (Code Baseline)	10-2	0.540		133	72
				Sum of Perimeter and FP	133	72

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, 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		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.en	ergy.wsu.edu/Documents/Duct%20Testing%20Standards%20
Is this a hydronic heating system?	No	
Location of Ducts	Unducted	
Location of Air Handler	Unconditioned Space	
	s Duct Testing Required? No	

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

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	819 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,962 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	180
Envelope Heat Load Sum of UA X ΔT	9,181 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	3,834 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,015 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,015 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	16,269 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing Unit 104 Building A Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com 253-468-4117

Messages / Results *

UA Reduction = 2.22, Proposed UA is better than baseline by 1%

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

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 779 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		
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0	0.3	300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	134	40.1	0.3	300	134	40.1	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,109	62.1	0.0	054	1,109	59.9	
Floors over Crawispace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	127	68.6	0.8	540	127	68.6	
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	182.7		Propo	sed UA Total	180.5	
	Regu	ired Credits	4.5		-	sed Credits		rom Tables 406.2 and 406.3
					-	nt Reduction	4.00/	Tom Tables 400.2 and 400.5
				U.				
					U	A Reduction	2.2	
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 meets th	ne 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	4.5	5.5

Table R4	106.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.4	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	4.5	

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

THERMAL ENVELOPE DETAILS - Proposed Design	

Conditioned Floor Area, Proposed Design 779 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
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

Overhea	d Glazing										
Plan	Component		Glazing		Wid	lth	Н	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	0
				c	overhead (Slazing A	rea We	ighted U			

Plan	Component		Glazing		Wid	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10
7	U=0.30 (Code Baseline)	Table 406.2	0.30	2	5	0	4	6	45.0	13.50
8	U=0.30 (Code Baseline)	Table 406.2	0.30	3	3	0	6	0	54.0	16.20
						Sum	of Area	a and UA	133.5	40.1
					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
				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		1,109	60
				Sum of Area and UA	1,109	60

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

Plan	Grade (less than 2 feet below grade) Component		Slab			
ID	Description	Ref.	F		Slab Perim	FP
	R10 2' vertical (Code Baseline)	10-2	0.540		127	69
				Sum of Perimeter and FP	127	69

Below Gr	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
Sum of Area, Length and UA 0 0.0 0 0								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 4	403
Whole House Mechanical Ventilation Airflow Rate	55	CFM

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy.v	Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20Standards%20Sta					
Is this a hydronic heating system?	No						
Location of Ducts	Unducted						
Location of Air Handler	Unconditioned Space						
Is Du	uct 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 Constructi	on Affidavit, Existing	
New Constructi	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	6,622 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	181
Envelope Heat Load Sum of UA X AT	9,207 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,647 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,854 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,854 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	16,067 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing Unit 201 Building A Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com

253-468-4117

Messages / Results *

UA Reduction = 2.42, Proposed UA is better than baseline by 2%

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 -- 819 sq. ft. Code Baseline - Baseline and proposed window areas are equal. Up to 15 sf exempt window and 24 sf exempt door allowable

Overhead Glazing U = (Vertical Glazing U = (Flat/Vaulted Ceilings U = (Wall (above grade) U = (0.300 0.500 0.300 0.027 0.056	40 0 111 0	12.0 0.0 33.3 0.0	0.300	40	UA	
Overhead Glazing U = (Vertical Glazing U = (Flat/Vaulted Ceilings U = (Wall (above grade) U = (0.500 0.300 0.027	0	0.0 33.3		0		
Vertical Glazing U = C Flat/Vaulted Ceilings U = C Wall (above grade) U = C	0.300 0.027	0 111 0	33.3	0.000		0.0	
Flat/Vaulted Ceilings U = (Wall (above grade) U = (0.027	111 0		0.000			
Wall (above grade) U =		0	0.0	0.300	111	33.3	
	0.056				0	0.0	
Floors over Crawlenace II =	0.000	1,209	67.7	0.054	1,209	65.3	
ricols ever clawispace o	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	0.570	0	0.0		0	0.0	
		_					
	Baselin	ne UA Total	113.0	Propo	sed UA Total	110.6	
	Requi	red Credits	4.5	Prop	osed Credits	5.5	from Tables 406.2 and 406.3
		_		UA Perce	nt Reduction	2.1%	
				ι	JA 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	4.5	5.5

Table R4	106.3 Energy Credits			
Option No.	Category	Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope		0.0	
2	Air Leakage Control and Efficient Ventilation		0.0	
3	High Efficiency HVAC	Option 3.4	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	4.5	

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

THERMAL ENVELOPE DETAILS - Proposed Design	

	Conditioned Floor Area, Proposed Design	819 s	q. ft	
	Classification Sma	all Dwelling U	Jnit	
	Notes			
_				

Plan	Component		Door		Wid	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	a 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 Are	a and UA	0	0	
				c	Overhead (Glazing A	rea We	ighted U			

Pla	n Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exer	npt		-						-	-
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
7	U=0.30 (Code Baseline)	Table 406.2	0.30	3	5	0	4	6	67.5	20.25
						Sum	of Area	and UA	111.0	33.3
					Vertical G	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
				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		1,209	65
				Sum of Area and UA	1,209	65

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

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 UA					0.0		0	0	

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced 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 E	Ouct Testing Required? No	

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	ion Affidavit, Existing	
New Construct	ion 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	819 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,962 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	111
Envelope Heat Load Sum of UA X ΔT	5,640 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X Δ T) X .018))	3,834 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,474 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	9,474 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	11,843 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing Unit 202 Building A Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com 253-468-4117

Messages / Results *

UA Reduction = 2.2, Proposed UA is better than baseline by 2%

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

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 779 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

SULTS - Comparison of Baseline and Proposed Design Component Performance, R occupancies		Baseline		Pro	posed Desig	ın	
Component i enormance, it occupancies	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40		
Overhead Glazing U =		0	0.0		0	0.0	
Vertical Glazing U =		143	42.8	0.300	143	42.8	
Flat/Vaulted Ceilings U =		0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,100	61.6	0.054	1,100	59.4	
Floors over Crawlspace U =		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	116.4	Propo	sed UA Total	114.2	
	Requ	ired Credits	4.5	Prope	sed Credits	5.5	rom Tables 406.2 and 406.3
		_		UA Perce	nt Reduction	4.007	
				ι	A Reduction	2.2	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 4							

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	4.5	5.5

Table R4	106.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.4	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	4.5	

 $^{{}^{\}star}\text{Refer}$ to WSEC 2018 Table R406.3 for complete option descriptions and requirements

THERMAL ENVELOPE DETAILS - Proposed Design	

Conditioned Floor Area, Proposed Design	779 sq. ft
Classification Small	Dwelling Unit
Notes	

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

Plan	Component		Glazing		Wic	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
						Sum	of Area	a and UA	0	0
				o	verhead (Glazing A	rea We	iahted U		

Р	lan	Component	Component Glazing Width		Vidth Height						
1	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exc	empt			-						-	-
1		U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
3		U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	6	81.0	24.30
8		U=0.30 (Code Baseline)	Table 406.2	0.30	3	3	0	6	0	54.0	16.20
							Sum	of Area	a and UA	142.5	42.8
Vertical Glazing Area Weighted U										0.300	
Vertical Glazing and Doors Area Weighted U										0.300	

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	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		1,100	59
				Sum of Area and UA	1,100	59

Floor (ov	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	

Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	ı
	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	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	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 E	Ouct Testing Required? No	

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	ion Affidavit, Existing	
New Construct	ion 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	779 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,622 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	114
Envelope Heat Load Sum of UA X ΔT	5,822 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X Δ T) X .018))	3,647 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,469 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	9,469 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	11,837 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

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

Messages / Results *

UA Reduction = 2.39, Proposed UA is better than baseline by 2%

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

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 819 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

SULTS - Comparison of Baseline and Proposed Design		Baseline			Dr	oposed Desig	ın.	
Component Performance, R occupancies			UA		U		UA	
I	U	Area		Е		Area		
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	111	33.3		0.300	111	33.3	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,196	67.0		0.054	1,196	64.6	
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	ine UA Total	112.3		Propo	sed UA Total	109.9	
	Requ	ired Credits	4.5		Propo	osed Credits	5.5	from Tables 406.2 and 406.3
		_			UA Perce	nt Reduction	0.407	
					U	JA Reduction	2.4	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 4			O					

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	4.5	5.5

Table R4	06.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.4	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 kV	Vh		0.0	
7	Appliance Package			0.0	
		•	Energy Credits	4.5	

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

HERMAL ENVELOPE DETAILS - Proposed Design		

	Conditioned Floor Area, Proposed Design	819 s	q. ft	
	Classification Sma	all Dwelling U	Jnit	
	Notes			
_				

Plan	Component		Door		Wid	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
203A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
203B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	a 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 Are	a and UA	0	0	
				c	Overhead (Glazing A	rea We	ighted U			

Plar	n Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exem	pt		-						-	-
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
7	U=0.30 (Code Baseline)	Table 406.2	0.30	3	5	0	4	6	67.5	20.25
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
						Sum	of Area	and UA	111.0	33.3
					Vertical G	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		1,196	65
				Sum of Area and UA	1,196	65

Floor (ov	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	

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 UA					0.0		0	0	

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced 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 E	Ouct Testing Required? No	

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	ion Affidavit, Existing	
New Construct	ion 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	819 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,962 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 ΔT	5,603 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X Δ T) X .018))	3,834 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,437 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	9,437 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	11,797 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

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

Messages / Results *

UA Reduction = 2.2, Proposed UA is better than baseline by 2%

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

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 779 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

RESULTS - Comparison of Baseline and Proposed Design							
Component Performance, R occupancies		Baseline			Proposed De	sign	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.30	0	40 12.0	
Overhead Glazing U =	0.500	0	0.0			0.0	
Vertical Glazing U =	0.300	143	42.8	0.30) 1	43 42.8	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0.0	
Wall (above grade) U =	0.056	1,100	61.6	0.05	4 1,1	00 59.4	
Floors over Crawlspace U =	0.029	0	0.0			0.0	
Slab on Grade F =	0.540	0	0.0			0.0	
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	116.4	ı	Proposed UA To	tal 114.2	
	Reau	ired Credits	4.5		Proposed Credi	ts 5.5	from Tables 406.2 and 406.3
					Percent Reducti	1.00/	11011 Tables 400.2 and 400.0
				UA.			
					UA Reducti	on 2.2	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	6 are ≥ tho	se required in	Section R40	6, then the home meets 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	4.5	5.5

Table R4	06.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope	nt Building Envelope		0.0	
2	r Leakage Control and Efficient Ventilation			0.0	
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 kV	Vh		0.0	
7	Appliance Package			0.0	
		•	Energy Credits	4.5	

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

HERMAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 779 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
204A	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
204B	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
								,	0	0.0
						Sum	of Area	a and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	d Glazing Component		Glazing		Wid	dth	Не	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet		Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	
				c	verhead (Glazing A	rea We	ighted U			

Pla	n Component		Glazing		Width		Height			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exen	npt		-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	6	81.0	24.30
8	U=0.30 (Code Baseline)	Table 406.2	0.30	3	3	0	6	0	54.0	16.20
						Sum	of Area	and UA	142.5	42.8
					Vertical G	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
				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		1,100	59
				Sum of Area and UA	1,100	59

Flo	or (ov	er crawl or exterior)						
F	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	

Plan	Component		Wall	Wall	Wall	Slab		Slab
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA

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 4	403
Whole House Mechanical Ventilation Airflow Rate	55 C	CFM

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

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	ion Affidavit, Existing	
New Construct	ion 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	779 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,622 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	114
Envelope Heat Load Sum of UA X ΔT	5,822 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X Δ T) X .018))	3,647 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,469 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	9,469 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	11,837 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing Unit 301 Building A Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com 253-468-4117

Messages / Results *

UA Reduction = 2.42, Proposed UA is better than baseline by 2%

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

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 819 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 Des	ign	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.30) 4	0 12.0	
Overhead Glazing U =	0.500	0	0.0			0.0	
Vertical Glazing U =	0.300	111	33.3	0.30) 11	1 33.3	
Flat/Vaulted Ceilings U =	0.027	819	22.1	0.02	7 81	9 22.1	
Wall (above grade) U =	0.056	1,209	67.7	0.05	1,20	9 65.3	
Floors over Crawispace U =	0.029	0	0.0			0.0	
Slab on Grade F =	0.540	0	0.0			0.0	
Below Grade Wall U =	0.042	0	0.0			0.0	
Below Grade Slab F =	0.570	0	0.0			0.0	
		<u></u>					
	Baseli	ne UA Total	135.1	I	Proposed UA Tot	al 132.7	
	Requ	ired Credits	4.5		Proposed Credit	s 5.5	from Tables 406.2 and 406.3
				UA	Percent Reduction	n 1.8%	
					UA Reduction	n 2.4	

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	4.5	5.5

Table R4	06.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.4	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 kV	Vh		0.0	
7	Appliance Package			0.0	
		•	Energy Credits	4.5	

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

THERMAL ENVELOPE DETAILS - Proposed Design	

Conditioned Floor Area, Proposed Design 819 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
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	a and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Overhea	d Glazing										
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 Are	a and UA	0	0	0
				c	overhead (Glazing A	Area We	ighted U			

ı	Plan	Component		Glazing		Wid	th	He	ight										
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA								
Ex	empt			-						-	-								
2		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80								
4		U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25								
7		U=0.30 (Code Baseline)	Table 406.2	0.30	3	5	0	4	6	67.5	20.25								
							Sum	of Area	a and UA	111.0	33.3								
						Vertical G	Slazing A	Area We	ighted U		0.300								
					Vertical G	lazing and	Doors A	rea We	Vertical Glazing and Doors Area Weighted U 0.3										

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled	10-7	0.027		819	22.1
				Sum of Area and UA	819	22.1

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,209	65
				Sum of Area and UA	1,209	65

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

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

Ventilation Requirements	
Number of Bedrooms	2
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	Balanced 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 E		

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	tion Affidavit, Existing	
New Construc	tion 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	819 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,962 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	133
Envelope Heat Load Sum of UA X ΔT	6,768 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X Δ T) X .018))	3,834 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,602 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,602 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	13,252 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing Unit 304 Building A Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com 253-468-4117

Messages / Results *

UA Reduction = 2.26, Proposed UA is better than baseline by 2%

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

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 819 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

JLTS - Comparison of Baseline and Proposed Design		D P			Proposed Des	ian	
Component Performance, R occupancies		Baseline		U	-	~	
[U	Area	UA		Area	UA	
Doors U =	0.300	40	12.0	0.300) 4	0 12.0	
Overhead Glazing U =	0.500	0	0.0			0.0	
Vertical Glazing U =	0.300	111	33.3	0.300	11	1 33.3	
Flat/Vaulted Ceilings U =	0.027	819	22.1	0.027	81	9 22.1	
Wall (above grade) U =	0.056	1,132	63.4	0.054	1,13	2 61.1	
Floors over Crawlspace U =	0.029	0	0.0			0.0	
Slab on Grade F =	0.540	0	0.0			0.0	
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	130.8	P	roposed UA Tota	128.5	
	Requ	ired Credits	4.5	l l	Proposed Credits	5.5	from Tables 406.2 and 406.3
		_		UA F	Percent Reductio	4 =0/	
					UA Reductio	n 2.3	
the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 4							

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	4.5	5.5

Table R4	106.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation			0.0	
3	High Efficiency HVAC		Option 3.4	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	4.5	

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

THERMAL ENVELOPE DETAILS - Proposed Design		

	Conditioned Floor Area, Proposed Design	819 s	q. ft	
	Classification Sma	all Dwelling U	Jnit	
	Notes			
_				

Plan	Component		Door		Wid	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	th	Не	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 C	lazing A	rea We	ighted U		

	lan	Glazing Schedule Component		Glazing		Wid	4h	LI o	ight	ws to Show	3
	ID I	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
_	empt	Description	Kei.	-	Qt.	1 661		1 661		-	-
2	ı	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
4	ı	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
7	ı	U=0.30 (Code Baseline)	Table 406.2	0.30	3	5	0	4	6	67.5	20.25
							Sum	of Area	and UA	111.0	33.3
						Vertical G	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
	R49 blown Attic STD baffled	10-7	0.027		819	22.1
				Sum of Area and UA	819	22.1

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,132	61
				Sum of Area and UA	1,132	61

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

Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	ı
	No slab on grade	NA	-			0	
				Sum of Perimeter and FP	0	0	

Plan	Component		Wall	Wall	Wall	Slab		Slab
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA
	Sum	of Area, Len	ath 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	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 Du	ict Testing Required? No	

Links to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construct	ion Affidavit, Existing	
New Construct	ion 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	819 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,962 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 ΔT	6,555 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X Δ T) X .018))	3,834 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,389 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,389 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	12,986 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	