PRMU20240406

Project Information
East Town Crossing Unit 101
Building F
Pioneer & Shaw, Puyallup

Contact Information
Synthesis 9, LLC
Brett Lindsay
blindsay@synthesis9.com
253-468-4117

City of Puyallup Building REVIEWED FOR COMPLIANCE bsnowden 03/03/2025 10:36:52 AM

Messages / Results *

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

City of Puyallup Development & Permitting Services ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

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 -- 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

RESULTS - Comparison of Baseline and Proposed Design

Component Performance, R occupancies	Baseline U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	104	31.1	0.300	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	0.054	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	0.540	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

Baseline UA Total	182.4	**Proposed UA Total**	180.0
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.3%
		UA Reduction	2.4

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design	819 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		40	12.0
							Exterior Doors Area Weighted U			0.300

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		0	0
							Overhead Glazing Area Weighted U			

Vertical Glazing Schedule

Rows to Show: 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	7	U=0.30 (Code Baseline)	Table 406.2	0.30	3	5	0	4	0	60.0	18.00
3	11	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
								Sum of Area and UA		103.5	31.1
								Vertical Glazing Area Weighted U			0.300
								Vertical Glazing and Doors Area Weighted U			0.300

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall 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

Floor (over crawl or exterior)

Plan ID	Component Description	Ref.	Floor U	Area	UA
			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		133	72
				Sum of Perimeter and FP	133	72

Below Grade Walls and Slabs

Plan ID	Component Description	Ref.	Wall U	Wall Area	Wall UA	Slab F	Slab Perim	Slab 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	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	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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 ΔT) 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 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	13,015 Btu / Hour	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	16,269 Btu / Hour	

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Messages / Results *

UA Reduction = 2.27, Proposed UA is better than baseline by 1%

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

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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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	108	32.3	0.300	108	32.3
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,135	63.6	0.054	1,135	61.3
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

Baseline UA Total	176.4	**Proposed UA Total**	174.1
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.3%
		UA Reduction	2.3

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		**40**	**12.0**
								Exterior Doors Area Weighted U		**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		**0**	**0**
								Overhead Glazing Area Weighted U		

Vertical Glazing Schedule

Rows to Show: 4

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	7	U=0.30 (Code Baseline)	Table 406.2	0.30	2	5	0	4	0	40.0	12.00
3	9	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
4	11	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
								Sum of Area and UA		**107.5**	**32.3**
								Vertical Glazing Area Weighted U			**0.300**
								Vertical Glazing and Doors Area Weighted U			**0.300**

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,135	61
			Sum of Area and UA	**1,135**	**61**

Floor (over crawl or exterior)

Plan ID	Component Description	Ref.	Floor U	Area	UA
			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		127	69
				Sum of Perimeter and FP	127	69

Below Grade Walls and Slabs

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

Compliance Certificate	Compliance Certificate	Instructions
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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	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	174	
Envelope Heat Load Sum of UA X ΔT	8,881	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	12,528	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	12,528	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	15,660	Btu / Hour

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Messages / Results *

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

Whole House Mechanical Ventilation Airflow Rate: 45 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

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Component Performance, R occupancies	Baseline U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	44	13.2	0.300	44	13.2
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,108	62.0	0.054	1,108	59.8
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	118	63.7	0.540	118	63.7
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	151.0	**Proposed UA Total**	148.7
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.5%
		UA Reduction	2.2

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design	683 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
				Sum of Area and UA					40	12.0
				Exterior Doors Area Weighted U						0.300

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
				Sum of Area and UA					0	0
				Overhead Glazing Area Weighted U						

Vertical Glazing Schedule

Rows to Show: 2

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	7	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	4	0	20.0	6.00
2	4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	0	6	0	24.0	7.20
								Sum of Area and UA		44.0	13.2
								Vertical Glazing Area Weighted U			0.300
								Vertical Glazing and Doors Area Weighted U			0.300

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,108	60
			Sum of Area and UA	1,108	60

Floor (over crawl or exterior)

Plan ID	Component Description	Ref.	Floor U	Area	UA
			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		118	64
				Sum of Perimeter and FP	118	64

Below Grade Walls and Slabs

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

Ventilation Requirements

Number of Bedrooms	1	
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	45 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

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Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	683 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	5,806 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	149	
Envelope Heat Load Sum of UA X ΔT	7,586 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,198 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,783 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	10,783 Btu / Hour	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	13,479 Btu / Hour	

Project Information
East Town Crossing Unit 104
Building F
Pioneer & Shaw, Puyallup

Contact Information
Synthesis 9, LLC
Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 2.32, 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 -- 761 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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	55	16.5	0.300	55	16.5
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,162	65.1	0.054	1,162	62.8
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	125	67.2	0.540	125	67.2
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	160.8	**Proposed UA Total**	158.5
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.4%
		UA Reduction	2.3

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design	761 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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 Area Weighted U		**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
								Sum of Area and UA	**0**	**0**
								Overhead Glazing Area Weighted U		

Vertical Glazing Schedule

Rows to Show: 2

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	6	0	15.0	4.50
2	7	U=0.30 (Code Baseline)	Table 406.2	0.30	2	5	0	4	0	40.0	12.00
									Sum of Area and UA	**55.0**	**16.5**
									Vertical Glazing Area Weighted U		**0.300**
									Vertical Glazing and Doors Area Weighted U		**0.300**

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,162	63
			Sum of Area and UA	**1,162**	**63**

Floor (over crawl or exterior)

Plan ID	Component Description	Ref.	Floor U	Area	UA
			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		125	67
				Sum of Perimeter and FP	125	67

Below Grade Walls and Slabs

Plan ID	Component Description	Ref.	Wall U	Wall Area	Wall UA	Slab F	Slab Perim	Slab 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	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	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	761 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,469 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	159	
Envelope Heat Load Sum of UA X ΔT	8,084 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,563 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,646 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	11,646 Btu / Hour	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	14,558 Btu / Hour	

Project Information
East Town Crossing Unit 105
Building F
Pioneer & Shaw, Puyallup

Contact Information
Synthesis 9, LLC
Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 2.61, 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

RESULTS - Comparison of Baseline and Proposed Design

Component Performance, R occupancies	Baseline U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	78	23.4	0.300	78	23.4
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,303	72.9	0.054	1,303	70.3
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	141	76.0	0.540	141	76.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	184.3	**Proposed UA Total**	181.7
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.4%
		UA 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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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 Area Weighted U		**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
								Sum of Area and UA	**0**	**0**
								Overhead Glazing Area Weighted U		

Vertical Glazing Schedule

Rows to Show: 2

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	8	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
2	10	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
									Sum of Area and UA	**78.0**	**23.4**
									Vertical Glazing Area Weighted U		**0.300**
									Vertical Glazing and Doors Area Weighted U		**0.300**

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,303	70
			Sum of Area and UA	**1,303**	**70**

Floor (over crawl or exterior)

Plan ID	Component Description	Ref.	Floor U	Area	UA
			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		141	76
				Sum of Perimeter and FP	141	76

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	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 Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	182	
Envelope Heat Load Sum of UA X ΔT	9,267	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	14,206	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	14,206	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	17,758	Btu / Hour

Project Information
East Town Crossing Unit 106
Building F
Pioneer & Shaw, Puyallup

Contact Information
Synthesis 9, LLC
Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 0.05, Proposed UA is better than baseline by 0%

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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	70	20.9	0.300	70	20.9
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	27	1.5	0.054	27	1.5
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	147	79.3	0.540	147	79.3
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	113.7	**Proposed UA Total**	113.7
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	0.0%
		UA Reduction	0.1

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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 Area Weighted U		**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
								Sum of Area and UA	**0**	**0**
								Overhead Glazing Area Weighted U		

Vertical Glazing Schedule

Rows to Show 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	5	**U=0.30 (Code Baseline)**	Table 406.2	0.30	1	4	6	3	6	15.8	4.73
2	8	**U=0.30 (Code Baseline)**	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3	10	**U=0.30 (Code Baseline)**	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
									Sum of Area and UA	**69.8**	**20.9**
									Vertical Glazing Area Weighted U		**0.300**
									Vertical Glazing and Doors Area Weighted U		**0.300**

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	27	1
			Sum of Area and UA	**27**	**1**

Floor (over crawl or exterior)

Plan ID	Component Description	Ref.	Floor U	Area	UA
			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		147	79
				Sum of Perimeter and FP	147	79

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20_

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	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 Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	114	
Envelope Heat Load Sum of UA X ΔT	5,796	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	10,501	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	10,501	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	13,127	Btu / Hour

Project Information
East Town Crossing Unit 107
Building F
Pioneer & Shaw, Puyallup

Contact Information
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253-468-4117

Messages / Results *

UA Reduction = 2.65, 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

RESULTS - Comparison of Baseline and Proposed Design

Component Performance, R occupancies	Baseline U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	130	38.9	0.300	130	38.9
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,327	74.3	0.054	1,327	71.7
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	148	80.0	0.540	148	80.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	205.2	**Proposed UA Total**	202.6
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.3%
		UA 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 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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		**40**	**12.0**
							Exterior Doors Area Weighted U			**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		**0**	**0**
							Overhead Glazing Area Weighted U			

Vertical Glazing Schedule

Rows to Show: 4

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	10	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
3	11	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
4	12	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
								Sum of Area and UA		**129.5**	**38.9**
								Vertical Glazing Area Weighted U			**0.300**
								Vertical Glazing and Doors Area Weighted U			**0.300**

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,327	72
			Sum of Area and UA	**1,327**	**72**

Floor (over crawl or exterior)

Plan ID	Component Description	Ref.	Floor U	Area	UA
			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		148	80
				Sum of Perimeter and FP	148	80

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20_

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	Unconditioned Space

Is Duct Testing Required? No

Links to Download Forms, Checklists and Other Resources

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

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70	F
Outdoor Design Temperature	19	F
Design Temperature Difference (ΔT)	51	F
Conditioned Floor Area, Proposed Design	1,149	ft2
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	203	
Envelope Heat Load Sum of UA X ΔT	10,330	Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	5,379	Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	15,710	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	15,710	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	19,637	Btu / Hour

Project Information
East Town Crossing Unit 108
Building F
Pioneer & Shaw, Puyallup

Contact Information
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Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 2.79, Proposed UA is better than baseline by 0%

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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	101	30.4	0.300	101	30.4
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,397	78.2	0.054	1,397	75.5
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	1,075	580.5	0.540	1,075	580.5
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	701.1	**Proposed UA Total**	698.3
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	0.4%
		UA Reduction	2.8

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		40	12.0
							Exterior Doors Area Weighted U			0.300

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		0	0
							Overhead Glazing Area Weighted U			

Vertical Glazing Schedule

Rows to Show: 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	5	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	3	6	47.3	14.18
2	8	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3	10	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
								Sum of Area and UA		101.3	30.4
								Vertical Glazing Area Weighted U			0.300
								Vertical Glazing and Doors Area Weighted U			0.300

Flat/Vaulted Ceilings

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

Walls (Above Grade)

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

Floor (over crawl or exterior)

Plan ID	Component Description	Ref.	Floor U	Area	UA
			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		1,075	581
				Sum of Perimeter and FP	1,075	581

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20_

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	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 Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	698	
Envelope Heat Load Sum of UA X ΔT	35,615 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	40,648 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	40,648 Btu / Hour	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	50,810 Btu / Hour	

Project Information
East Town Crossing Unit 201
Building F
Pioneer & Shaw, Puyallup

Contact Information
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253-468-4117

Messages / Results *

UA Reduction = 2.43, 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.

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

RESULTS - Comparison of Baseline and Proposed Design

Component Performance, R occupancies	Baseline U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	92	27.5	0.300	92	27.5
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,215	68.0	0.054	1,215	65.6
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

Baseline UA Total	107.5	**Proposed UA Total**	105.1
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	2.3%
		UA Reduction	2.4

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design	819 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		**40**	**12.0**
							Exterior Doors Area Weighted U			**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		**0**	**0**
							Overhead Glazing Area Weighted U			

Vertical Glazing Schedule

Rows to Show: 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	7	U=0.30 (Code Baseline)	Table 406.2	0.30	3	5	0	4	0	60.0	18.00
3	11	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
								Sum of Area and UA		**91.5**	**27.5**
								Vertical Glazing Area Weighted U			**0.300**
								Vertical Glazing and Doors Area Weighted U			**0.300**

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,215	66
			Sum of Area and UA	**1,215**	**66**

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

Plan ID	Component Description	Ref.	Wall U	Wall Area	Wall UA	Slab F	Slab Perim	Slab 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	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	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	105	
Envelope Heat Load Sum of UA X ΔT	5,358 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,834 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,193 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	9,193 Btu / Hour	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	11,491 Btu / Hour	

Project Information
East Town Crossing Unit 202
Building F
Pioneer & Shaw, Puyallup

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253-468-4117

Messages / Results *

UA Reduction = 2.25, 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.

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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	116	34.7	0.300	116	34.7
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,127	63.1	0.054	1,127	60.9
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

Baseline UA Total	109.8	**Proposed UA Total**	107.5
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	2.1%
		UA Reduction	2.3

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		**40**	**12.0**
							Exterior Doors Area Weighted U			**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		**0**	**0**
							Overhead Glazing Area Weighted U			

Vertical Glazing Schedule

Rows to Show: 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	9	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
3	11	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
								Sum of Area and UA		**115.5**	**34.7**
								Vertical Glazing Area Weighted U			**0.300**
								Vertical Glazing and Doors Area Weighted U			**0.300**

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,127	61
			Sum of Area and UA	**1,127**	**61**

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

Plan ID	Component Description	Ref.	Wall U	Wall Area	Wall UA	Slab F	Slab Perim	Slab 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	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	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	108	
Envelope Heat Load Sum of UA X ΔT	5,483	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	9,131	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	9,131	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	11,413	Btu / Hour

Project Information
East Town Crossing Unit 203
Building F
Pioneer & Shaw, Puyallup

Contact Information
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Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 2.21, Proposed UA is better than baseline by 3%

Whole House Mechanical Ventilation Airflow Rate: 45 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 -- 682 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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	47	14.1	0.300	47	14.1
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,105	61.9	0.054	1,105	59.7
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	88.0	**Proposed UA Total**	85.8
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	2.5%
		UA Reduction	2.2

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design	682 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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 Area Weighted U		**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
								Sum of Area and UA	**0**	**0**
								Overhead Glazing Area Weighted U		

Vertical Glazing Schedule

Rows to Show 2

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	6	**U=0.30 (Code Baseline)**	Table 406.2	0.30	1	4	6	6	0	27.0	8.10
2	7	**U=0.30 (Code Baseline)**	Table 406.2	0.30	1	5	0	4	0	20.0	6.00
									Sum of Area and UA	**47.0**	**14.1**
									Vertical Glazing Area Weighted U		**0.300**
									Vertical Glazing and Doors Area Weighted U		**0.300**

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,105	60
			Sum of Area and UA	**1,105**	**60**

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

Ventilation Requirements

Number of Bedrooms	1	
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	45 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	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	682 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	5,797 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	86	
Envelope Heat Load Sum of UA X ΔT	4,374 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,193 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	7,567 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	7,567 Btu / Hour	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	9,458 Btu / Hour	

Project Information
East Town Crossing Unit 204
Building F
Pioneer & Shaw, Puyallup

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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

* 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 -- 780 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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	63	18.9	0.300	63	18.9
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,195	66.9	0.054	1,195	64.5
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

Baseline UA Total	97.8	**Proposed UA Total**	95.4
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	2.4%
		UA Reduction	2.4

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design	780 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
				Sum of Area and UA					40	12.0
				Exterior Doors Area Weighted U						0.300

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
				Sum of Area and UA					0	0
				Overhead Glazing Area Weighted U						

Vertical Glazing Schedule

Rows to Show: 2

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	6	0	15.0	4.50
2	9	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
					Sum of Area and UA					63.0	18.9
					Vertical Glazing Area Weighted U						0.300
					Vertical Glazing and Doors Area Weighted U						0.300

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,195	65
			Sum of Area and UA	1,195	65

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

Plan ID	Component Description	Ref.	Wall U	Wall Area	Wall UA	Slab F	Slab Perim	Slab 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	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	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	780 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,630 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	95	
Envelope Heat Load Sum of UA X ΔT	4,867 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,652 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	8,518 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	8,518 Btu / Hour	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	10,648 Btu / Hour	

Project Information
East Town Crossing Unit 205
Building F
Pioneer & Shaw, Puyallup

Contact Information
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253-468-4117

Messages / Results *

UA Reduction = 2.61, 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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	78	23.4	0.300	78	23.4
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,303	73.0	0.054	1,303	70.4
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	108.4	**Proposed UA Total**	105.8
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	2.4%
		UA 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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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 Area Weighted U		**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
								Sum of Area and UA	**0**	**0**
								Overhead Glazing Area Weighted U		

Vertical Glazing Schedule

Rows to Show: 2

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	8	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
2	10	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
									Sum of Area and UA	**78.0**	**23.4**
									Vertical Glazing Area Weighted U		**0.300**
									Vertical Glazing and Doors Area Weighted U		**0.300**

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,303	70
			Sum of Area and UA	**1,303**	**70**

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	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 Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	106	
Envelope Heat Load Sum of UA X ΔT	5,394 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	10,333 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	10,333 Btu / Hour	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	12,917 Btu / Hour	

Project Information
East Town Crossing Unit 206
Building F
Pioneer & Shaw, Puyallup

Contact Information
Synthesis 9, LLC
Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 2.75, Proposed UA is better than baseline by 3%

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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	70	20.9	0.300	70	20.9
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,373	76.9	0.054	1,373	74.1
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

Baseline UA Total	109.8	**Proposed UA Total**	107.1
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	2.5%
		UA 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 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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
				Sum of Area and UA					40	12.0
				Exterior Doors Area Weighted U						0.300

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
				Sum of Area and UA					0	0
				Overhead Glazing Area Weighted U						

Vertical Glazing Schedule

Rows to Show: 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	3	6	15.8	4.73
2	8	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3	10	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
								Sum of Area and UA		69.8	20.9
								Vertical Glazing Area Weighted U			0.300
								Vertical Glazing and Doors Area Weighted U			0.300

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,373	74
			Sum of Area and UA	1,373	74

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20_

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	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 Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	107	
Envelope Heat Load Sum of UA X ΔT	5,460	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	10,165	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	10,165	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	12,707	Btu / Hour

Project Information
East Town Crossing Unit 207
Building F
Pioneer & Shaw, Puyallup

Contact Information
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253-468-4117

Messages / Results *

UA Reduction = 2.65, 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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	130	38.9	0.300	130	38.9
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,327	74.3	0.054	1,327	71.7
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	125.2	**Proposed UA Total**	122.5
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	2.1%
		UA 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 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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		40	12.0
							Exterior Doors Area Weighted U			0.300

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		0	0
							Overhead Glazing Area Weighted U			

Vertical Glazing Schedule

Rows to Show: 4

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	10	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
3	11	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
4	12	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
								Sum of Area and UA		129.5	38.9
								Vertical Glazing Area Weighted U			0.300
								Vertical Glazing and Doors Area Weighted U			0.300

Flat/Vaulted Ceilings

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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,327	72
			Sum of Area and UA	1,327	72

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20_

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	Unconditioned Space

Is Duct Testing Required? No

Links to Download Forms, Checklists and Other Resources

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

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70	F
Outdoor Design Temperature	19	F
Design Temperature Difference (ΔT)	51	F
Conditioned Floor Area, Proposed Design	1,149	ft2
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	123	
Envelope Heat Load Sum of UA X ΔT	6,249	Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	5,379	Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,628	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	11,628	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	14,535	Btu / Hour

Project Information
East Town Crossing Unit 208
Building F
Pioneer & Shaw, Puyallup

Contact Information
Synthesis 9, LLC
Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 2.79, 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

RESULTS - Comparison of Baseline and Proposed Design

Component Performance, R occupancies	Baseline U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	101	30.4	0.300	101	30.4
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,397	78.2	0.054	1,397	75.5
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

Baseline UA Total	120.6	**Proposed UA Total**	117.8
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	2.3%
		UA Reduction	2.8

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		**40**	**12.0**
							Exterior Doors Area Weighted U			**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		**0**	**0**
							Overhead Glazing Area Weighted U			

Vertical Glazing Schedule

Rows to Show: 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	5	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	3	6	47.3	14.18
2	8	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3	10	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
								Sum of Area and UA		**101.3**	**30.4**
								Vertical Glazing Area Weighted U			**0.300**
								Vertical Glazing and Doors Area Weighted U			**0.300**

Flat/Vaulted Ceilings

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

Walls (Above Grade)

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

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20_

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	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 Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	118	
Envelope Heat Load Sum of UA X ΔT	6,009	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	11,042	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	11,042	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	13,803	Btu / Hour

Project Information
East Town Crossing Unit 301
Building F
Pioneer & Shaw, Puyallup

Contact Information
Synthesis 9, LLC
Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 2.43, 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.

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

RESULTS - Comparison of Baseline and Proposed Design

Component Performance, R occupancies	Baseline U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	92	27.5	0.300	92	27.5
Flat/Vaulted Ceilings U =	0.027	819	22.1	0.027	819	22.1
Wall (above grade) U =	0.056	1,215	68.0	0.054	1,215	65.6
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

Baseline UA Total	129.6	**Proposed UA Total**	127.2
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.9%
		UA Reduction	2.4

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design	819 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		**40**	**12.0**
							Exterior Doors Area Weighted U			**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		**0**	**0**
							Overhead Glazing Area Weighted U			

Vertical Glazing Schedule

Rows to Show: 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	7	U=0.30 (Code Baseline)	Table 406.2	0.30	3	5	0	4	0	60.0	18.00
3	11	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
								Sum of Area and UA		**91.5**	**27.5**
								Vertical Glazing Area Weighted U			**0.300**
								Vertical Glazing and Doors Area Weighted U			**0.300**

Flat/Vaulted Ceilings

Plan ID	Component Description	Ref.	Attic U	Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027	819	22.1
			Sum of Area and UA	**819**	**22.1**

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,215	66
			Sum of Area and UA	**1,215**	**66**

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

Plan ID	Component Description	Ref.	Wall U	Wall Area	Wall UA	Slab F	Slab Perim	Slab 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	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	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	127	
Envelope Heat Load Sum of UA X ΔT	6,486	Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,834	Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,321	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	10,321	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	12,901	Btu / Hour

Project Information
East Town Crossing Unit 302
Building F
Pioneer & Shaw, Puyallup

Contact Information
Synthesis 9, LLC
Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 2.25, 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.

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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	114	34.2	0.300	114	34.2
Flat/Vaulted Ceilings U =	0.027	779	21.0	0.027	779	21.0
Wall (above grade) U =	0.056	1,127	63.1	0.054	1,127	60.8
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	130.3	**Proposed UA Total**	128.1
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.7%
		UA Reduction	2.3

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
				Sum of Area and UA					40	12.0
				Exterior Doors Area Weighted U						0.300

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
				Sum of Area and UA					0	0
				Overhead Glazing Area Weighted U						

Vertical Glazing Schedule

Rows to Show: 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	0	3	0	6.0	1.80
2	9	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
3	11	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
					Sum of Area and UA					114.0	34.2
					Vertical Glazing Area Weighted U						0.300
					Vertical Glazing and Doors Area Weighted U						0.300

Flat/Vaulted Ceilings

Plan ID	Component Description	Ref.	Attic U	Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027	779	21.0
			Sum of Area and UA	779	21.0

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,127	61
			Sum of Area and UA	1,127	61

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

Plan ID	Component Description	Ref.	Wall U	Wall Area	Wall UA	Slab F	Slab Perim	Slab 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	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	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	128	
Envelope Heat Load Sum of UA X ΔT	6,532	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	10,179	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	10,179	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	12,724	Btu / Hour

Project Information
East Town Crossing Unit 303
Building F
Pioneer & Shaw, Puyallup

Contact Information
Synthesis 9, LLC
Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 0.05, Proposed UA is better than baseline by 0%

Whole House Mechanical Ventilation Airflow Rate: 45 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 -- 683 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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	44	13.2	0.300	44	13.2
Flat/Vaulted Ceilings U =	0.027	683	18.4	0.027	683	18.4
Wall (above grade) U =	0.056	24	1.3	0.054	24	1.3
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	45.0	**Proposed UA Total**	44.9
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	0.1%
		UA Reduction	0.0

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design	683 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		**40**	**12.0**
							Exterior Doors Area Weighted U			**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		**0**	**0**
							Overhead Glazing Area Weighted U			

Vertical Glazing Schedule

Rows to Show: 2

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	0	6	0	24.0	7.20
2	7	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	4	0	20.0	6.00
								Sum of Area and UA		**44.0**	**13.2**
								Vertical Glazing Area Weighted U			**0.300**
								Vertical Glazing and Doors Area Weighted U			**0.300**

Flat/Vaulted Ceilings

Plan ID	Component Description	Ref.	Attic U	Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027	683	18.4
			Sum of Area and UA	**683**	**18.4**

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	24	1
			Sum of Area and UA	**24**	**1**

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

Ventilation Requirements

Number of Bedrooms	1	
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	45 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	Instructions
Insulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	683 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	5,806 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	45	
Envelope Heat Load Sum of UA X ΔT	2,292	Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,198	Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	5,489	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	5,489	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	6,861	Btu / Hour

Project Information
East Town Crossing Unit 304
Building F
Pioneer & Shaw, Puyallup

Contact Information
Synthesis 9, LLC
Brett Lindsay
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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

* 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 -- 780 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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design 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	63	18.9	0.300	63	18.9
Flat/Vaulted Ceilings U =	0.027	780	21.1	0.027	780	21.1
Wall (above grade) U =	0.056	1,195	66.9	0.054	1,195	64.5
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

Baseline UA Total	118.9	**Proposed UA Total**	116.5
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	2.0%
		UA Reduction	2.4

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design	780 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		**40**	**12.0**
								Exterior Doors Area Weighted U		**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		**0**	**0**
								Overhead Glazing Area Weighted U		

Vertical Glazing Schedule

Rows to Show: 2

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	6	0	15.0	4.50
2	9	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
								Sum of Area and UA		**63.0**	**18.9**
								Vertical Glazing Area Weighted U			**0.300**
								Vertical Glazing and Doors Area Weighted U			**0.300**

Flat/Vaulted Ceilings

Plan ID	Component Description	Ref.	Attic U	Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027	780	21.1
			Sum of Area and UA	**780**	**21.1**

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,195	65
			Sum of Area and UA	**1,195**	**65**

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

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

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	780 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,630 ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	116	
Envelope Heat Load Sum of UA X ΔT	5,941 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,652 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,592 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	9,592 Btu / Hour	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	11,990 Btu / Hour	

Project Information
East Town Crossing Unit 305
Building F
Pioneer & Shaw, Puyallup

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Brett Lindsay
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253-468-4117

Messages / Results *

UA Reduction = 2.61, 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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	78	23.4	0.300	78	23.4
Flat/Vaulted Ceilings U =	0.027	1,055	28.5	0.027	1,055	28.5
Wall (above grade) U =	0.056	1,303	73.0	0.054	1,303	70.4
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	136.9	**Proposed UA Total**	134.3
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.9%
		UA 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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
				Sum of Area and UA					40	12.0
				Exterior Doors Area Weighted U						0.300

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
				Sum of Area and UA					0	0
				Overhead Glazing Area Weighted U						

Vertical Glazing Schedule

Rows to Show: 2

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	8	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
2	10	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
					Sum of Area and UA					78.0	23.4
					Vertical Glazing Area Weighted U						0.300
					Vertical Glazing and Doors Area Weighted U						0.300

Flat/Vaulted Ceilings

Plan ID	Component Description	Ref.	Attic 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

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,303	70
			Sum of Area and UA	1,303	70

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	Unconditioned Space

Is Duct Testing Required? No

Links to Download Forms, Checklists and Other Resources

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

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70	F
Outdoor Design Temperature	19	F
Design Temperature Difference (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	134	
Envelope Heat Load Sum of UA X ΔT	6,847	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	11,786	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	11,786	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	14,733	Btu / Hour

Project Information
East Town Crossing Unit 306
Building F
Pioneer & Shaw, Puyallup

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253-468-4117

Messages / Results *

UA Reduction = 2.75, 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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	70	20.9	0.300	70	20.9
Flat/Vaulted Ceilings U =	0.027	1,005	27.1	0.027	1,005	27.1
Wall (above grade) U =	0.056	1,373	76.9	0.054	1,373	74.1
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

Baseline UA Total	136.9	**Proposed UA Total**	134.2
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	2.0%
		UA 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 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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		**40**	**12.0**
							Exterior Doors Area Weighted U			**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		**0**	**0**
							Overhead Glazing Area Weighted U			

Vertical Glazing Schedule

Rows to Show: 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	3	6	15.8	4.73
2	8	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3	10	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
								Sum of Area and UA		**69.8**	**20.9**
								Vertical Glazing Area Weighted U			**0.300**
								Vertical Glazing and Doors Area Weighted U			**0.300**

Flat/Vaulted Ceilings

Plan ID	Component Description	Ref.	Attic 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**

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,373	74
			Sum of Area and UA	**1,373**	**74**

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20_

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	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 Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	134	
Envelope Heat Load Sum of UA X ΔT	6,844	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	11,549	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	11,549	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	14,437	Btu / Hour

Project Information
East Town Crossing Unit 307
Building F
Pioneer & Shaw, Puyallup

Contact Information
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Messages / Results *

UA Reduction = 2.66, 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 U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	130	38.9	0.300	130	38.9
Flat/Vaulted Ceilings U =	0.027	1,149	31.0	0.027	1,149	31.0
Wall (above grade) U =	0.056	1,328	74.4	0.054	1,328	71.7
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0

Baseline UA Total	156.3	**Proposed UA Total**	153.6
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.7%
		UA 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 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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
							Sum of Area and UA		**40**	**12.0**
								Exterior Doors Area Weighted U		**0.300**

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
							Sum of Area and UA		**0**	**0**
								Overhead Glazing Area Weighted U		

Vertical Glazing Schedule

Rows to Show: 4

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	10	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
3	11	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
4	12	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
								Sum of Area and UA		**129.5**	**38.9**
								Vertical Glazing Area Weighted U			**0.300**
								Vertical Glazing and Doors Area Weighted U			**0.300**

Flat/Vaulted Ceilings

Plan ID	Component Description	Ref.	Attic 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**

Walls (Above Grade)

Plan ID	Component Description	Ref.	Wall U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,328	72
			Sum of Area and UA	**1,328**	**72**

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20_

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	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 Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70	F
Outdoor Design Temperature	19	F
Design Temperature Difference (ΔT)	51	F
Conditioned Floor Area, Proposed Design	1,149	ft2
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	154	
Envelope Heat Load Sum of UA X ΔT	7,834	Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	5,379	Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,213	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	13,213	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	16,516	Btu / Hour

Project Information
East Town Crossing Unit 308
Building F
Pioneer & Shaw, Puyallup

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253-468-4117

Messages / Results *

UA Reduction = 2.79, 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

RESULTS - Comparison of Baseline and Proposed Design

Component Performance, R occupancies	Baseline U	Baseline Area	Baseline UA	Proposed Design U	Proposed Design Area	Proposed Design UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	101	30.4	0.300	101	30.4
Flat/Vaulted Ceilings U =	0.027	1,075	29.0	0.027	1,075	29.0
Wall (above grade) U =	0.056	1,397	78.2	0.054	1,397	75.5
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

Baseline UA Total	149.6	**Proposed UA Total**	146.9
Required Credits	4.5	**Proposed Credits**	7.0 from Tables 406.2 and 406.3
		UA Percent Reduction	1.9%
		UA Reduction	2.8

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 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**

THERMAL ENVELOPE DETAILS - Proposed Design

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

Exterior Doors

Plan ID	Component Description	Ref.	Door U	Qt.	Width Feet	Width Inch	Height Feet	Height 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
									0	0.0
				Sum of Area and UA					40	12.0
				Exterior Doors Area Weighted U						0.300

Overhead Glazing

Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
				Sum of Area and UA					0	0
				Overhead Glazing Area Weighted U						

Vertical Glazing Schedule

Rows to Show: 3

	Plan ID	Component Description	Ref.	Glazing U	Qt.	Width Feet	Width Inch	Height Feet	Height Inch	Area	UA
	Exempt			-						-	-
1	5	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	3	6	47.3	14.18
2	8	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3	10	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
					Sum of Area and UA					101.3	30.4
					Vertical Glazing Area Weighted U						0.300
					Vertical Glazing and Doors Area Weighted U						0.300

Flat/Vaulted Ceilings

Plan ID	Component Description	Ref.	Attic U	Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027	1,075	29.0
			Sum of Area and UA	1,075	29.0

Walls (Above Grade)

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

Floor (over crawl or exterior)

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

Below Grade Walls and Slabs

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

Ventilation Requirements

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

HVAC Thermal Distribution System — Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%20_

Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	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 Construction	Affidavit, Existing	
New Construction	Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design — Try Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool

Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (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	147	
Envelope Heat Load Sum of UA X ΔT	7,490	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	12,522	Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1 For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	12,522	Btu / Hour
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps Building and Duct Heat Loss X 1.40 for all other systems	15,653	Btu / Hour