### PRMU20240401

Project Information	1	Messages / Results *		
East Town Crossing Unit 101			City of P Development & Pe	
Building D			ISSUED	
Pioneer & Shaw, Puyallup		UA Reduction = 2.72, Proposed UA is better than baseline by 1%	Engineering	Public Works
Contact Information			Fire	Traffic
Synthesis 9, LLC				
Brett Lindsay				
blindsay@synthesis9.com		Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, D	istributed	
253-468-4117				
	*	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AH.	J.	

ANAL	ISIS SET UP							
	What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (pr	eferred)					
	Project Building Type?	New Construction						
	Occupancy Type?	R2 Multifamily						
	Code Version?	WSEC 2018						
	Classification:	Small Dwelling Unit 1207 sq. ft.						
	Baseline Description:	Code Baseline - Baseline and proposed window an						
	About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door	to 15 sf exempt window and 24 sf exempt door allowable					

Component Performance, R occupancies		Baseline		P	roposed Desig	gn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	137	41.0	0.300	137	41.0	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,361	76.2	0.054	1,361	73.5	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	152	82.2	0.540	152	82.2	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ne UA Total	211.3	Prop	osed UA Total	208.6	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0	from Tables 406.2 and 406
				UA Perce	ent Reduction	1.3%	
					UA Reduction	2.7	

Table R	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	06.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65	
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System		NA		
5.1	Efficient Water Heating			0.0	
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh		0.0	
7	Appliance Package			0.0	
			Energy Credits	6.0	

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



Conditioned Floor Area, Proposed Design	1,207 sq. ft
Classification	Small Dwelling Unit
Notes	

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

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

Plan	Component		Glazing		Wic	lth	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	6	81.0	24.30
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
6	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	2	0	12.0	3.60
Sum of Area and UA									136.5	41.0
Vertical Glazing Area Weighted U										0.300
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,361	73
				-		

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



Slab on Grade (less than 2 feet below grade)						
Plan	Component		Slab			
ID	Description	Ref.	F		Slab Perim	FP
	R10 2' vertical (Code Baseline)	10-2	0.540		152	82
Sum of Perimeter and FF					152	82

152	Sum of Perimeter and FP

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

Ventilation Requirements			
Number of Bedrooms	3		
Run-Time Percent in Each 4-Hour Segment	100%		
Is the system Balanced?	Balanced	1	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	1	Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	n 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					

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (∆T)	51 F	
	4 007 80	
Conditioned Floor Area, Proposed Design	1,207 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>10,260</b> ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	209	
Envelope Heat Load Sum of UA X ∆T	10,639 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X AT) X .018))	5,651 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	16,290 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	16,290 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	20,363 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		



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

# 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. Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline			Pr	oposed Desig	jn	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	105	31.4		0.300	105	31.4	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,394	78.1		0.054	1,394	75.3	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	152	82.3		0.540	152	82.3	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
		_						
	Baselir	ne UA Total	203.7		Propo	sed UA Total	200.9	
Required Credits 4.5					Prop	osed Credits	7.0 <sub>f</sub>	rom Tables 406.2 and 406
UA Percent Reduction						1.4%		
						JA Reduction	2.8	

Table R4	Table R406.2 Fuel Normalization Credits								
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)				
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0				

Table R4	Table R406.3 Energy Credits							
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*		
1	Efficient Building Envelope				0.0			
2	Air Leakage Control and Efficient Ventilation			Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65		
3	High Efficiency HVAC			Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.		
4	High Efficiency HVAC Distribution System				NA			
5.1	Efficient Water Heating				0.0			
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater		
6	Renewable Electric Energy	kW	Vh		0.0			
7	Appliance Package				0.0			
				Energy Credits	6.0			

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



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

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

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

Vertical Glazing Schedule Rows to Show									ws to Show	3
Plan	Component		Glazing		Wie	lth	He	eight		1
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1 2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	4	6	60.8	18.23
2 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
3 7	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
						Sum	of Are	a and UA	104.8	31.4
					Vertical (	Glazing A	rea We	ighted U		0.300
Vertical Glazing and Doors Area Weighted U							0.300			

Vertical Glazing	and Doors Area	Weighted U

Flat/Vault	ed Ceilings						
Plan	Component		Attic				1
ID	Description	Ref.	U		Area	UA	
	No ceiling/roof in thermal envelope	NA	-			0.0	
							1
				Sum of Area and UA	0	0.0	

	Walls (Ab	ove Grade)						
	Plan	Component		Wall				
	ID	Description	Ref.	U		Net Area	UA	
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,394	75	,
ſ								
ľ								1
					Sum of Area and UA	1,394	75	

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



5	Slab on Grade (less than 2 feet below grade)							
	Plan	Component		Slab				
	ID	Description	Ref.	F		Slab Perim	FP	
		R10 2' vertical (Code Baseline)	10-2	0.540		152	82	
Γ								
Γ								
					Sum of Perimeter and FP	152	82	

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

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

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

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

Heating System Sizing - Proposed Design	Out BetterBuiltNW's HVAC Sizing Tool: https://be	terbuiltnw.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	201	
Envelope Heat Load Sum of UA X ΔT	10,248 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	5,033 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	15,281 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	15,281 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	19,102 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		



Project Information	Messages / Results *
East Town Crossing Unit 103	
Building D	
Pioneer & Shaw, Puyallup	UA Reduction = 2.59, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1055 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

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

Component Performance, R occupancies		Baseline		Pi	oposed Desig	jn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	84	25.2	0.300	84	25.2	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,297	72.6	0.054	1,297	70.0	
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	
		_					
	Baseli	ne UA Total	185.8	Propo	osed UA Total	183.2	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0	from Tables 406.2 and
				UA Perce	ent Reduction	1.4%	
					JA Reduction	2.6	

Table R4	06.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation			Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% $$ / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65 $$
3	High Efficiency HVAC	ncy HVAC			2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System	C Distribution System			NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	k	κWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	6.0	

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



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

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

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

	Vertical	Glazing Schedule							Ro	ws to Show	2
	Plan	Component		Glazing		Wie	dth	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
	Exempt			-						-	-
1	1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	6	54.0	16.20
2	3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
	Sum of Area and UA							84.0	25.2		
Vertical Glazing Area Weighted U								0.300			
					Vertical G	lazing and	Doors A	Area We	ighted U		0.300

 	 	3

Flat/Vaul	ted Ceilings						
Plan	Component		Attic				1
ID	Description	Ref.	U		Area	UA	i i
	No ceiling/roof in thermal envelope	NA	-			0.0	
				Sum of Area and UA	0	0.0	

	Walls (Ab	Walls (Above Grade)										
	Plan	Component		Wall								
	ID	Description	Ref.	U		Net Area	UA					
ſ		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,297	70					
I												
ľ												
ſ												
Ì					Sum of Area and UA	1,297	70					

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



Plan	Component		Slab		
ID	Description	Ref.	F	Slab Perim	FP
	R10 2' vertical (Code Baseline)	10-2	0.540	141	76

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

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

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

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

Heating System Sizing - Proposed Design	y Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	1.055 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	8,968 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	183
Envelope Heat Load Sum of UA X ∆T	9,342 Btu / Hour
<b>Air Leakage Heat Load</b> ((Volume X 0.6) X ∆T) X .018))	4,939 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	14,281 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	14,281 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	17,852 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



oject Information	Messages / Results *
East Town Crossing Unit 104	
Building D	
Pioneer & Shaw, Puyallup	UA Reduction = 2.73, Proposed UA is better than baseline by 1%
ontact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

### ANALYSIS SET UP

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 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

Component Performance, R occupancies		Baseline		Pi	roposed Desig	gn
	U	Area	UA	U	Area	UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	77	23.2	0.300	77	23.2
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,365	76.5	0.054	1,365	73.7
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
		_				r
	Baselin	ne UA Total	190.9	Propo	osed UA Total	188.2
	Requi	ired Credits	4.5	Prop	osed Credits	7.0
				UA Perce	ent Reduction	1.4%
					UA Reduction	2.7

Table R4	Table R406.2 Fuel Normalization Credits								
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)				
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0				

Table R4	Table R406.3 Energy Credits							
Option No.	category		Select Options	Energy Credits	Brief Description of Selected Options*			
1	Efficient Building Envelope		0.0					
2	Air Leakage Control and Efficient Ventilation	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65				
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.				
4	High Efficiency HVAC Distribution System		NA					
5.1	Efficient Water Heating			0.0				
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater			
6	Renewable Electric Energy	kWh		0.0				
7	Appliance Package		0.0					
			Energy Credits	6.0				

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



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

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

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

Vertical Glazing Schedule Rows								ws to Show	3	
Plan	Component		Glazing		Wic	ith	He	eight		1
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10
2 2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	4	6	20.3	6.08
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Are	a and UA	77.3	23.2
					Vertical 0	Glazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

Vertical Glazing and Doors Area Weighted U	
--	--

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

١	Walls (Ab	ove Grade)					
	Plan	Component		Wall			
	ID	Description	Ref.	U		Net Area	UA
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,365	74
Γ							
Γ							
					Sum of Area and UA	1,365	74

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



Slab on	Grade (less than 2 feet below grade)					
Plan	Component		Slab			
ID	Description	Ref.	F		Slab Perim	FP
	R10 2' vertical (Code Baseline)	10-2	0.540		147	79
				Sum of Perimeter and FP	147	79

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

Ventilation Requirements		
Number of Bedrooms	2	
Run-Time Percent in Each 4-Hour Segment	100%	
Is the system Balanced?	Balanced	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	d Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	on 403
Whole House Mechanical Ventilation Airflow Rate	70	0 CFM

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,005ft2	
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	188	
Envelope Heat Load Sum of UA X ΔT	9,597 Btu / Hour	
Air Leakage Heat Load         ((Volume X 0.6) X ∆T) X .018))	4,705 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	14,302 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	14,302 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	17,878 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		



Project Information	Messages / Results *
East Town Crossing Unit 105	
Building D	
Pioneer & Shaw, Puyallup	UA Reduction = 2.59, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

### What code compliance pathway are you using? Prescriptive Path Compliance with Option 1 (preferred) Project Building Type? New Construction Occupancy Type? 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			Pr	oposed Desig	gn	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	84	25.2		0.300	84	25.2	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,297	72.6		0.054	1,297	70.0	
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	
		-						
	Baseli	ine UA Total	185.8		Propo	sed UA Total	183.2	
	Requ	ired Credits	4.5		Prop	osed Credits	7.0 f	rom Tables 406.2 and 406.3
					UA Perce	nt Reduction	1.4%	
					ı	JA Reduction	2.6	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	6 are ≥ tho	se required in	Section R40	6, then the home r	neets the WSE	C.		

Table R4	06.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation			Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC	cy HVAC			2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System	HVAC Distribution System			NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kV	Wh		0.0	
7	Appliance Package				0.0	
				Energy Credits	6.0	

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



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

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

Plan	Component		Glazing		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
Sum of Area and U.								a and UA	0	0
				c	) verhead (					

	Vertical Glazing Schedule Rows to Show 2									2	
	Plan	Component		Glazing		Wie	dth	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
	Exempt			-						-	-
1	1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	6	54.0	16.20
2	3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
	Sum of Area and UA								84.0	25.2	
Vertical Glazing Area Weighted U									0.300		
					Vertical G	lazing and	Doors A	rea We	ighted U		0.300

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

	Walls (Ab	ove Grade)					
	Plan	Component		Wall			
	ID	Description	Ref.	U		Net Area	UA
ſ		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,297	70
I							
ľ							
ſ							
Ì					Sum of Area and UA	1,297	70

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



Slab on Grade (less than 2 feet below grade)							
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	R10 2' vertical (Code Baseline)	10-2	0.540		141	76	
Sum of Perimeter and FP						76	

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

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

HVAC Thermal Distribution System	Download RS-33 (2018	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						

s to Download Forms, Checklists and Other Resources	Link	
Compliance Certificate	Compliance Certificate	Instructions
nsulation Certificate for Residential New Construction	Insulation Certificate	
Duct Testing Affadavits		
Existing Con:	struction Affidavit, Existing	
New Con:	struction 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	183
Envelope Heat Load Sum of UA X ΔT	9,342 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X.018))	4,939 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	14,281 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	14,281 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	17,852 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information	Messages / Results *
East Town Crossing Unit 106	
Building D	
Pioneer & Shaw, Puyallup	UA Reduction = 2.73, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

Component Performance, R occupancies		Baseline			Pr	oposed Desi	gn	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			(	0.0	
Vertical Glazing U =	0.300	77	23.2		0.300	77	23.2	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,365	76.5		0.054	1,365	5 73.7	
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	
	Baseli	ne UA Total	190.9		Propo	sed UA Tota	188.2	
Required Credits 4.5				Prop	osed Credits	7.0 f	rom Tables 406.2 and 406.	
UA Percent Re						ent Reduction	1.4%	
UA Reduction						2.7		

Table R	Table R406.2 Fuel Normalization Credits							
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)			
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0			

Table R4	Table R406.3 Energy Credits							
Option No.	No. Category		Select Options	Energy Credits	Brief Description of Selected Options*			
1	Efficient Building Envelope		0.0					
2	Air Leakage Control and Efficient Ventilation	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65				
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.				
4	High Efficiency HVAC Distribution System			NA				
5.1	Efficient Water Heating			0.0				
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater			
6	Renewable Electric Energy	kWh		0.0				
7	Appliance Package			0.0				
			Energy Credits	6.0				

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



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

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

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

Vertie	cal Glazing Schedule							Ro	ws to Show	3
Pla	n Component		Glazing		Wio	ith	He	eight		ĺ
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exen	npt		-						-	-
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10
2 2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	4	6	20.3	6.08
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Area	a and UA	77.3	23.2
					Vertical	lazing A	roa We	ighted II		0 200

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

0.300

v	ertical Olaz	ing and be	Jois Alea I	reigniteu o	

Flat/V	Vaulte	ed Ceilings					
Pla	an	Component		Attic			
ID	D	Description	Ref.	U		Area	UA
		No ceiling/roof in thermal envelope	NA	-			0.0
					Sum of Area and UA	0	0.0

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,365	74

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



Sla	ab on G	irade (less than 2 feet below grade)					
	Plan	Component		Slab			
	ID	Description	Ref.	F		Slab Perim	FP
		R10 2' vertical (Code Baseline)	10-2	0.540		147	79
					Sum of Perimeter and FP	147	79

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

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

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.e	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	
1	Duct Testing Required? No	

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

Heating System Sizing - Proposed Design	y Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	<u>1,005</u> ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>8,543</b> ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	188	
Envelope Heat Load Sum of UA Χ ΔΤ	9,597 Btu / Hour	
<b>Air Leakage Heat Load</b> ((Volume X 0.6) X ∆T) X .018))	4,705 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	14,302 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	14,302 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	17,878 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		



Project Information	Messages / Results *
East Town Crossing Unit 107	
Building D	
Pioneer & Shaw, Puyallup	UA Reduction = 2.72, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.
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 -- 1207 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal. Up to 15 sf exempt window and 24 sf exempt door allowable

RESULTS - Comparison of Baseline and Proposed Design								
Component Performance, R occupancies		Baseline				oposed Desig	-	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	139	41.6		0.300	139	41.6	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,360	76.1		0.054	1,360	73.4	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	152	82.2		0.540	152	82.2	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
	Basel	ine UA Total	211.9		Propo	sed UA Total	209.2	
	Requ	ired Credits	4.5		Prop	osed Credits	7.0	from Tables 406.2 and 406.3
	UA Perce	ent Reduction	1.3%					
					ı	JA Reduction	2.7	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	6 are ≥ tho	se required in	Section R40	6, then the home r	neets the WSE	C.		

Table R	Table R406.2 Fuel Normalization Credits										
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)						
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0						

Table R4	406.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System		NA		
5.1	Efficient Water Heating			0.0	
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh		0.0	
7	Appliance Package			0.0	
			Energy Credits	6.0	

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



Conditioned Floor Area, Proposed Design	1,207 sq. ft
Classification	Small Dwelling Unit
Notes	

Exterior	Doors									
Plan	Component		Door		Wie	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									0	0.0
107A	Code Baseline, U=0.30	-	0.30	1	3	C	6	8	20	6.0
107B	Code Baseline, U=0.30	-	0.30	1	3	C	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Are	a and UA	40	12.0
					Exterio	r Doors A	Area We	ighted U		0.300

Overhead Plan	d Glazing Component		Glazing		Wid	lth	Н	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet		Area	UA
									0	
									0	
									0	
									0	
									0	
Sum of Area and UA										0
				c	Overhead (	Glazing A	Area We	eighted U		

Plan	Component		Glazing		Wic	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	6	81.0	24.30
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
7	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
Sum of Area and UA							138.5	41.6		
Vertical Glazing Area Weighted U								0.300		
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,360	73
	·			Sum of Area and UA	1,360	73

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



	Grade (less than 2 feet below grade)					
Plan	Component		Slab			
ID	Description	Ref.	F		Slab Perim	FP
	R10 2' vertical (Code Baseline)	10-2	0.540		152	82
				Sum of Perimeter and FP	152	82

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

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

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,207 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	10,260 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	209
Envelope Heat Load Sum of UA X ∆T	10,670 Btu / Hour
Air Leakage Heat Load         ((Volume X 0.6) X ∆T) X .018))	5,651 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	16,321 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	16,321 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	20,401 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information	Messages / Results *
East Town Crossing Unit 108	
Building D	
Pioneer & Shaw, Puyallup	UA Reduction = 2.76, Proposed UA is better than baseline by 1%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.
ANALYSIS SET UP	

# What code compliance pathway are you using? Prescriptive Path Compliance with Option 1 (preferred) Project Building Type? New Construction Occupancy Type? R2 Multifamily Code Version? WSEC 2018 Classification: Small Dwelling Unit -- 1075 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal. About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	jn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	118	35.3	0.300	118	35.3	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,381	77.3	0.054	1,381	74.6	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	152	82.3	0.540	152	82.3	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baselin	ne UA Total	206.9	Propo	sed UA Total	204.1	
	Requi	red Credits	4.5	Prop	osed Credits	7.0	rom Tables 406.2 and 406.
				UA Perce	nt Reduction	1.3%	
					JA Reduction	2.8	

Table R406.2 Fuel Normalization Credits Total Credits (406.2 & 406.3) Fuel Normalization Full Description Energy Credits (406.3) System No. Select System Type Credits (406.2) 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. 2 Heat Pump, air-to-air or air to water 1.0 6.0 7.0 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).

Table R4	106.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System			NA	
5.1	Efficient Water Heating			0.0	
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh		0.0	
7	Appliance Package			0.0	
			Energy Credits	6.0	

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



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

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

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

Vertical Glazing Schedule Rows to Show								3			
P	lan	Component		Glazing		Wic	ith	He	ight		
I	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exe	empt			-						-	-
1 1		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10
22		U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	4	6	60.8	18.23
3 3		U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
							Sum	of Area	a and UA	117.8	35.3
						Vertical 0	Glazing A	Area We	ighted U		0.300
					Vertical G	lazing and	Doors A	Area We	ighted U		0.300

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

	Walls (Above Grade)							
	Plan	Component		Wall				
	ID	Description	Ref.	U		Net Area	UA	
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,381	75	
Γ								
Γ								
Ĩ					Sum of Area and UA	1,381	75	

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



Slab on Grade (less than 2 feet below grade)						
Plan	Component		Slab			
ID	Description	Ref.	F		Slab Perim	FP
	R10 2' vertical (Code Baseline)	10-2	0.540		152	82
Sum of Perimeter and FP 152						82

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

Ventilation Requirements		
Number of Bedrooms	3	
Run-Time Percent in Each 4-Hour Segment	100%	
Is the system Balanced?	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	СЕМ

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

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

Heating System Sizing - Proposed Design	y Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,075 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>9,138</b> ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	-
Sum of UA, including exempt door and window	204	
Envelope Heat Load Sum of UA X ΔT	10,411 Btu / Hour	
<b>Air Leakage Heat Load</b> ((Volume X 0.6) X ∆T) X .018))	5,033 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	15,444 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	15,444 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	19,305 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		



Project Information	Messages / Results *
East Town Crossing Unit 201	
Building D	
Pioneer & Shaw, Puyallup	UA Reduction = 2.72, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

### What code compliance pathway are you using? Prescriptive Path Compliance with Option 1 (preferred) Project Building Type? New Construction Occupancy Type? R2 Multifamily Code Version? WSEC 2018 Classification: Small Dwelling Unit -- 1207 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal. About Your Selection: Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	gn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		C	0.0	
Vertical Glazing U =	0.300	137	41.0	0.300	137	41.0	
Flat/Vaulted Ceilings U =	0.027	0	0.0		C	0.0	
Wall (above grade) U =	0.056	1,362	76.3	0.054	1,362	73.5	
Floors over Crawlspace U =	0.029	0	0.0		C	0.0	
Slab on Grade F =	0.540	0	0.0		C	0.0	
Below Grade Wall U =	0.042	0	0.0		C	0.0	
Below Grade Slab F =	0.570	0	0.0		C	0.0	
		_					
	Baseli	ne UA Total	129.2	Propo	sed UA Tota	126.5	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0 f	rom Tables 406.2 and 406.3
				UA Perce	nt Reduction	2.1%	
				ι	JA Reduction	2.7	

Table R406.2 Fuel Normalization Credits Total Credits (406.2 & 406.3) Fuel Normalization Full Description Energy Credits (406.3) Select System Type System No. Credits (406.2) 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. 2 Heat Pump, air-to-air or air to water 1.0 6.0 7.0 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).

Table R4	106.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System	/AC 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

### WSU Code Compliance Calculator, WSEC 2018

Conditioned Floor Area, Proposed Design 1,207 sq. ft		
Classification Small Dwelling Unit	City of F Development & P	ermitting Services
Notes	Building	PERMIT
	Engineering	Public Works Traffic

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

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

Plan	Component		Glazing		Wic	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	6	81.0	24.30
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
6	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	2	0	12.0	3.60
						Sum	of Area	a and UA	136.5	41.0
					Vertical C	Glazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

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

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,362	74

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

City of F Development & P ISSUED	ermitting Service:
Building	Planning
Engineering	Public Works
Fire	Traffic

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

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

Ventilation Requirements		
Number of Bedrooms	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	in 403
Whole House Mechanical Ventilation Airflow Rate	70	CFM

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

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

Heating System Sizing - Proposed Design Try 0	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,207 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	10,260 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	126
Envelope Heat Load Sum of UA X AT	6,451 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X AT) X .018))	5,651 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,102 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,102 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	15,127 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing Unit 202	City of Poyallup Devictoment & Permitting Service
Building D	ISSUED PERMIT
Pioneer & Shaw, Puyallup	UA Reduction = 2.79, Proposed UA is better than baseline by 2%
Contact Information	Frei Trafic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

### ANALYSIS SET UP

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1075 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

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

Component Performance, R occupancies					Pr	oposed Desig	jn	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	103	30.8		0.300	103	30.8	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,396	78.2		0.054	1,396	75.4	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	0	0.0			0	0.0	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
	Baseli	ne UA Total	121.0		Propo	sed UA Total	118.2	
	Requi	ired Credits	4.5		Prop	osed Credits	7.0	from Tables 406.2 and 40
					UA Perce	ent Reduction	0.00/	
						JA Reduction	2.8	

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	06.3 Energy Credits			
Option No.	Category	Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope		0.0	
2	Air Leakage Control and Efficient Ventilation	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System		NA	
5.1	Efficient Water Heating		0.0	
5.2-5.6	Efficient Water Heating	Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy kWh		0.0	
7	Appliance Package		0.0	
		Energy Credits	6.0	

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

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

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

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

Plan	Component		Glazing		Wic	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	4	6	60.8	18.23
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
6	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	2	0	12.0	3.60
						Sum	of Area	a and UA	102.8	30.8
					Vertical C	Glazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	iahted U		0.300

Vertical Glazing and Doors Area Weighted U	
--	--

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

Walls (Above Grade)								
Pla	n Component		Wall					
ID	Description	Ref.	U		Net Area	UA		
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,396	75		
				Sum of Area and UA	1,396	75		

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

City of F Development & P ISSUED	ermitting Servic
Building	Planning
Engineering	Public Works
Fire	Traffic

Slab on (	Grade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	No slab on grade	NA	-			(	5
							1
							1
-				Sum of Perimeter and FP	0	(	0

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

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

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

Compliance Certificate         Compliance Certificate         Instructions           Insulation Certificate for Residential New Construction         Insulation Certificate         Insulation Certificate           Duct Testing Affadavits         Extra Certificate         Extra Certificate         Insulation
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	y Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,075_ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>9,138</b> 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 Χ ΔΤ	6,028 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	5,033 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,061 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,061 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	13,826 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing Unit 203	City of Puyallup Devicement & Permittion Service
Building D	ISSUED PENIT Building Planning
Pioneer & Shaw, Puyallup	UA Reduction = 2.59, Proposed UA is better than baseline by 2%
Contact Information	Frei Tratic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

### ANALYSIS SET UP

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1055 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

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

Component Performance, R occupancies		Baseline		Pr	oposed Desig	gn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	84	25.2	0.300	84	25.2	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,297	72.6	0.054	1,297	70.0	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ne UA Total	109.8	Propo	osed UA Total	107.2	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0	from Tables 406.2 and 40
				UA Perce	ent Reduction	2.4%	
					JA Reduction	2.6	

Table R4	Table R406.2 Fuel Normalization Credits											
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)							
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0							

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation			Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC			Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System			NA		
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	1	kWh		0.0	
7	7 Appliance Package				0.0	
				Energy Credits	6.0	

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

### WSU Code Compliance Calculator, WSEC 2018

Conditioned Floor Area, Proposed Design 1,055 sq. ft							
Classification Small Dwelling Unit							
Notes	Building	ED PERMIT Planning					
	Engineerin	Public Wor					

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

Overhea	d Glazing										
Plan	Component		Glazing		Wi	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
Sum of Area and UA									0	0	5
Overhead Glazing Area Weighted L											

Vertical	I Glazing Schedule							Ro	ws to Show	2
Plan	Component		Glazing		Wie	dth	Н	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt	t		-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	6	54.0	16.20
2 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Are	a and UA	84.0	25.2
					Vertical	Glazina /	lroa Wa	ighted II		0 200

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

0.300

•	•

Ited Ceilings					
Component		Attic			
Description	Ref.	U		Area	UA
No ceiling/roof in thermal envelope	NA	-			0.0
			Sum of Area and UA	0	0.0
	Component Description	Component Description Ref.	Component Attic Description Ref. U	Component     Attic       Description     Ref.     U       No ceiling/roof in thermal envelope     NA     -       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope       Image: Component of thermal envelope     Image: Component of thermal envelope     Image: Component of thermal envelope <t< td=""><td>Component     Attic       Description     Ref.</td></t<>	Component     Attic       Description     Ref.

Walls (Above Grade)										
Plan	Component		Wall							
ID	Description	Ref.	U		Net Area	UA				
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,297	70				
				Sum of Area and UA	1,297	70				

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

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



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

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

HVAC Thermal Distribution System	Download RS-33 (2018) http://www	w.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	
	s Duct Testing Required? No	

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

Heating System Sizing - Proposed Design	Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (∆T)	51 F	
Conditioned Floor Area, Proposed Design	1,055 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>8,968</b> 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	5,468 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,939 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,408 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,408 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	13,009 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing Unit 204	City of Poyallup Devictoment & Permitting Service
Building D	ISSUED PERMIT
Pioneer & Shaw, Puyallup	UA Reduction = 2.73, Proposed UA is better than baseline by 2%
Contact Information	Frei Trafic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

### ANALYSIS SET UP

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 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

Component Performance, R occupancies		Baseline		Pr	oposed Desig	jn 🛛
	U	Area	UA	U	Area	UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	77	23.2	0.300	77	23.2
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0
Wall (above grade) U =	0.056	1,365	76.5	0.054	1,365	73.7
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0
		_				
	Baseli	ne UA Total	111.6	Propo	sed UA Total	108.9
	Requ	ired Credits	4.5	Prop	osed Credits	7.0
				UA Perce	ent Reduction	2.4%
					JA Reduction	2.7

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	06.3 Energy Credits			
Option No.	Category	Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope		0.0	
2	Air Leakage Control and Efficient Ventilation	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System		NA	
5.1	Efficient Water Heating		0.0	
5.2-5.6	Efficient Water Heating	Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy kWh		0.0	
7	Appliance Package		0.0	
		Energy Credits	6.0	

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

### WSU Code Compliance Calculator, WSEC 2018

Conditioned Floor Area, Proposed Design 1,005 sq. ft			
Classification Small Dwelling Unit	Development	of Puyallup & Permitting Servis	ices
Notes	Building	ED PERMIT Planning	
	Engineerin	g Public Work	-

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

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

Plan	I Glazing Schedule Component		Glazing		Wio	ith	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	t		-						-	-
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10
2 2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	4	6	20.3	6.08
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Area	a and UA	77.3	23.2
Vertical Glazing Area Weighted U								0.300		
Vertical Glazing and Doors Area Weighted U										0.300

Vertical Glazing	and Doors Area	Weighted U

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

Walls (	Above Grade)		1			
Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,365	74
	-	·		Sum of Area and UA	1,365	74

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

City of F Development & P ISSUED	ermitting Servic
Building	Planning
Engineering	Public Works
Fire	Traffic

Slab on (	Grade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	No slab on grade	NA	-			(	5
							1
							1
-				Sum of Perimeter and FP	0	(	0

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

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

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

Compliance Certificate         Compliance Certificate         Instructions           Insulation Certificate for Residential New Construction         Insulation Certificate         Insulation Certificate
Design the Article Manual State
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	y Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool	
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (∆T)	51 F	
Conditioned Floor Area, Proposed Design	1,005 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	109	
Envelope Heat Load Sum of UA X ΔT	5,554 Btu / Hour	
<b>Air Leakage Heat Load</b> ((Volume X 0.6) X ∆T) X .018))	4,705 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,260 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,260 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	12,824 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

East Town Crossing Unit 205	City of Puyallup Devicement & Permittion Service
Building D	SSUED PERMIT
Pioneer & Shaw, Puyallup	UA Reduction = 2.59, Proposed UA is better than baseline by 2%
ontact Information	Frei Tratic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1055 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

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

Component Performance, R occupancies		Baseline			Pr	oposed Desig	yn	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	84	25.2		0.300	84	25.2	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade)  U =	0.056	1,297	72.6		0.054	1,297	70.0	
Floors over Crawlspace U =	0.029	0	0.0	[		0	0.0	
Slab on Grade F =	0.540	0	0.0			0	0.0	
Below Grade Wall U =	0.042	0	0.0	[		0	0.0	
Below Grade Slab F =	0.570	0	0.0	[		0	0.0	
	Baseli	ne UA Total	109.8		Propo	sed UA Total	107.2	
	Requi	ired Credits	4.5		Prop	osed Credits	7.0	from Ta
					UA Perce	nt Reduction	0.40/	
					ι	JA Reduction	2.6	

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	06.3 Energy Credits			
Option No.	Category	Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope		0.0	
2	Air Leakage Control and Efficient Ventilation	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System		NA	
5.1	Efficient Water Heating		0.0	
5.2-5.6	Efficient Water Heating	Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy kWh		0.0	
7	Appliance Package		0.0	
		Energy Credits	6.0	

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

Conditioned Floor Area, Proposed Design 1,055 sq. ft								
Classification Small Dwelling Unit								
Notes		ISSUED F Building	Planning					
		Engineering	Public Works Traffic					

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

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

Vertical	Glazing Schedule							Ro	ws to Show	2
Plan	Component		Glazing		Wio	dth	He	eight		ĺ
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	- 1
1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	6	54.0	16.20
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Area	a and UA	84.0	25.2
					Vertical (	Glazing A	Area We	iahted U		0.300

Vertical Glazing and Doors Area Weighted U

Component Description		Attic		
Description	Pof		Area	11A

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,297	70
				Γ		
				Ē		
				Ē		

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

Slab on (	Grade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	No slab on grade	NA	-			0	)
	·	•	•	Sum of Perimeter and FP	0	C	5



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

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

HVAC Thermal Distribution System	Download RS-33 (2018) http://www	w.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	
	s Duct Testing Required? No	

ts 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 Const	ruction Affidavit, Existing	
New Const	ruction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design	Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (∆T)	51 F	
Conditioned Floor Area, Proposed Design	1,055 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>8,968</b> 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	5,468 Btu / Hour	
<b>Air Leakage Heat Load</b> ((Volume X 0.6) X ∆T) X .018))	4,939 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,408 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,408 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	13,009 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing Unit 206	City of Puyallup Development A memiting Services
Building D	ISSUED PERMIT Building Planning
Pioneer & Shaw, Puyallup	UA Reduction = 2.73, Proposed UA is better than baseline by 2%
Contact Information	Fie Trafic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 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

Component Performance, R occupancies		Baseline		Pr	oposed Desig	yn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	77	23.2	0.300	77	23.2	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,365	76.5	0.054	1,365	73.7	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	111.6	Propo	sed UA Total	108.9	
	Requi	ired Credits	4.5	Prop	osed Credits	7.0	from Tables 406.2 and 406
				UA Perce	ent Reduction	2.4%	
					JA Reduction	2.7	

Table R406.2 Fuel Normalization Credits Total Credits (406.2 & 406.3) Fuel Normalization Full Description Energy Credits (406.3) Select System Type System No. Credits (406.2) 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. 2 Heat Pump, air-to-air or air to water 1.0 6.0 7.0 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).

Table R4	06.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System			NA	
5.1	Efficient Water Heating			0.0	
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh		0.0	
7	Appliance Package			0.0	
			Energy Credits	6.0	

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



Conditioned Floor Area, Proposed Design	1,005	5 sq. ft
Classification	Small Dwelling	ng Unit
Notes		

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

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

Plan	Component		Glazing		Wio	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	4	6	20.3	6.08
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
Sum of Area and UA 77							77.3	23.2		
Vertical Glazing Area Weighted U							0.300			
Vertical Glazing and Doors Area Weighted U							0.300			

Flat/Vaul	ted Ceilings						
Plan	Component		Attic				
ID	Description	Ref.	U		Area	UA	
	No ceiling/roof in thermal envelope	NA	-			0.0	
Sum of Area and UA 0 0.0							
				Sum of Area and UA	0	0.0	1

١	Walls (Above Grade)							
	Plan	Component		Wall				
	ID	Description	Ref.	U		Net Area	UA	
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,365	74	
Γ								
Γ								
					Sum of Area and UA	1,365	74	

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



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

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

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

HVAC Thermal Distribution System Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%							
Is this a hydronic heating system?	No						
Location of Ducts	Unducted						
Location of Air Handler	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	on Affidavit, Existing	
New Construction	on <u>Affidavit, New</u>	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design Try	y Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool	
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (∆T)	51 F	
Conditioned Floor Area, Proposed Design	1,005 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	109	
Envelope Heat Load Sum of UA X ΔT	5,554 Btu / Hour	
<b>Air Leakage Heat Load</b> ((Volume X 0.6) X ∆T) X .018))	4,705 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,260 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,260 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	12,824 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		



Project Information	Messages / Results *
East Town Crossing Unit 207	
Building D	
Pioneer & Shaw, Puyallup	UA Reduction = 2.72, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.
ANALYSIS SET UP	

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 1207 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	jn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	139	41.6	0.300	139	41.6	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,359	76.1	0.054	1,359	73.4	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	129.7	Propo	osed UA Total	126.9	
	Requi	ired Credits	4.5	Prop	osed Credits	7.0 f	rom Tables 406.2 and 406
				UA Perce	ent Reduction	2.1%	
					JA Reduction	2.7	

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	406.3 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	kWł	h		0.0	
7	Appliance Package				0.0	
				Energy Credits	6.0	

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



Conditioned Floor Area, Proposed Design	1,207 sq. ft
Classification	Small Dwelling Unit
Notes	

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

Plan	d Glazing Component		Glazing		Wio	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
						Sum	of Area	a and UA	0	0
				c	verhead (	Glazing A	rea We	iahted U		

Plan	Component		Glazing		Wic	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	6	81.0	24.30
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
7	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
Sum of Area and UA 138.5								41.6		
Vertical Glazing Area Weighted U									0.300	
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

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

ID         Description         Ref.         U         Net Area           R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)         10-5         0.054         1,359         1,359           ID         ID         ID         ID         ID         ID         1,359         ID           ID	an	Component		Wall		
R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)         10-5         0.054         1,359         1,359           Image: Comparison of the compa	D	Description	Ref.	U	Net Area	UA
	R	21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,359	73

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



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

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

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

HVAC Thermal Distribution System	Download RS-33 (2018) http://www.energy.	gy.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							

Compliance Certificate Instructions
Insulation Contificate for Decidential New Construction
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 0	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,207 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	10,260 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 ∆T	6,474 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X AT) X .018))	5,651 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,125 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,125 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	15,157 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	



Project Information	Messages / Results *
East Town Crossing Unit 208	
Building D	
Pioneer & Shaw, Puyallup	UA Reduction = 2.76, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.
ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)

What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 1075 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	gn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	118	35.3	0.300	118	35.3	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,381	77.3	0.054	1,381	74.6	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ne UA Total	124.6	Propo	sed UA Total	121.9	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0	from Tables 406.2 and 40
				UA Perce	nt Reduction	2.2%	
				ι	JA Reduction	2.8	

Table R	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	06.3 Energy Credits			
Option No.	Category	Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope		0.0	
2	Air Leakage Control and Efficient Ventilation	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System		NA	
5.1	Efficient Water Heating		0.0	
5.2-5.6	Efficient Water Heating	Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy kWh		0.0	
7	Appliance Package		0.0	
		Energy Credits	6.0	

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



0.300

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

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

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

Vertical Glazing Schedule Rows to Show								3		
Plan	Component		Glazing		Wio	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exem	pt		-						-	- 1
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10
2 2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	4	6	60.8	18.23
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Area	a and UA	117.8	35.3
					Vortical		roa Ma	ighted II		0 200

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

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

1	Walls (Above Grade)							
	Plan	Component		Wall				
	ID	Description	Ref.	U		Net Area	UA	
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,381	75	,
I								
Γ								
					Sum of Area and UA	1,381	75	

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



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

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

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	СЕМ

HVAC Thermal Distribution System Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standar							
Is this a hydronic heating system?	No						
Location of Ducts	Unducted						
Location of Air Handler	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 Con	struction Affidavit, Existing	
New Con	nstruction Affidavit, New	
Prescriptive Checklist for 2018 WSEC	Prescriptive Checklist	
Alterations (Remodel) Worksheet	Worksheet	

Heating System Sizing - Proposed Design	y Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>9,138</b> ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	122	
Envelope Heat Load Sum of UA X ΔT	6,216 Btu / Hour	
<b>Air Leakage Heat Load</b> ((Volume X 0.6) X ∆T) X .018))	5,033 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,249 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,249 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,061 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		



Project Information	Messages / Results *
East Town Crossing Unit 301	
Building D	
Pioneer & Shaw, Puyallup	UA Reduction = 2.72, Proposed UA is better than baseline by 2%
Contact Information	
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.
ANALYSIS SET UP	

ANALTSIS SET OF	
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 1208 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pr	oposed Desig	gn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	137	41.0	0.300	137	41.0	
Flat/Vaulted Ceilings U =	0.027	1,208	32.6	0.027	1,208	32.6	
Wall (above grade) U =	0.056	1,361	76.2	0.054	1,361	73.5	
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	
	Baseli	ne UA Total	161.8	Propo	sed UA Total	159.1	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0 fr	om Tables 4
		_		UA Perce	nt Reduction	4 20/	
					JA Reduction	2.7	

Table	R406.2 Fuel Normalization Credits				
System I	o. Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	06.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC		Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System			NA	
5.1	Efficient Water Heating			0.0	
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh		0.0	
7	Appliance Package			0.0	
			Energy Credits	6.0	

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

Conditioned Floor Area, Proposed Design 1,208 sq. ft		
Classification Small Dwelling Unit	City of F Development & P	Puyallup ermitting Services
Notes	Building	Planning
	Engineering	Public Works Traffic

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

Plan	Component		Glazing		Wio	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
						Sum	of Area	a and UA	0	0
				o	verhead (	Glazing A	Area We	ahted U		

Plan	Component		Glazing		Wid	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	6	81.0	24.30
2 4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
6	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	2	0	12.0	3.60
						Sum	of Area	a and UA	136.5	41.0
					Vertical 0	Glazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	ighted U		0.300

Plan	Component		Attic		
ID	Description	Ref.	U	Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027	1,208	32.6

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,361	74

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



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

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

Ventilation Requirements			
Number of Bedrooms	3		
Run-Time Percent in Each 4-Hour Segment	100%		
Is the system Balanced?	Balanced	١	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	١	Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	n 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%2
Is this a hydronic heating system?	No
Location of Ducts	Unducted
Location of Air Handler	Unconditioned Space
Is Duct Testing	Required? No

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

Heating System Sizing - Proposed Design Try C	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	1,208 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	10,268 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 ∆T	8,113 Btu / Hour
Air Leakage Heat Load         ((Volume X 0.6) X ∆T) X .018))	5,656 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,768 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,768 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	17,210 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information	Messages / Results *
East Town Crossing Unit 302	City of Puyalup Devicoment & Permitting Service
Building D	ISSUED PERMIT
Pioneer & Shaw, Puyallup	UA Reduction = 2.79, Proposed UA is better than baseline by 2%
Contact Information	Fee Trate
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1075 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

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

Component Performance, R occupancies		Baseline		Pr	oposed Desig	n	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	103	30.8	0.300	103	30.8	
Flat/Vaulted Ceilings U =	0.027	1,075	29.0	0.027	1,075	29.0	
Wall (above grade) U =	0.056	1,396	78.2	0.054	1,396	75.4	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	150.0	Propo	sed UA Total	147.2	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0	from Tables 406.2
				UA Perce	nt Reduction	1.9%	
					JA Reduction	2.8	

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	06.3 Energy Credits			
Option No.	Category	Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope		0.0	
2	Air Leakage Control and Efficient Ventilation	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System		NA	
5.1	Efficient Water Heating		0.0	
5.2-5.6	Efficient Water Heating	Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy kWh	kWh 0.0		
7	Appliance Package		0.0	
		Energy Credits	6.0	

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

Conditioned Floor Area, Proposed Design	1,075 sq. ft		
Classification	Small Dwelling Unit	City of I Development & P ISSUED	
Notes		Building	PERMIT
		Engineering	Public Works Traffic

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

Plan	Component		Glazing		Wio	Width H		eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
						Sum	of Area	a and UA	0	0
				c	verhead (	Glazing A	Area We	iahted U		

Plan	Component		Glazing		Wic	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	4	6	60.8	18.23
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
6	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	2	0	12.0	3.60
Sum of Area and UA								102.8	30.8	
Vertical Glazing Area Weighted U									0.300	
Vertical Glazing and Doors Area Weighted U									0.300	

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	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

ID	Description				
	Description	Ref.	U	Net Area	UA
R	21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,396	75

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

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

Slab on (	Grade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	No slab on grade	NA	-			(	5
							1
							1
-				Sum of Perimeter and FP	0	(	0

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

Ventilation Requirements	
Number of Bedrooms	3
Run-Time Percent in Each 4-Hour Segment	100%
Is the system Balanced?	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.er	Download RS-33 (2018) http://www.energy.wsu.edu/Documents/Duct%20Testing%20Standards%2					
Is this a hydronic heating system?	No						
Location of Ducts	Unducted						
Location of Air Handler	Unconditioned Space						
Is Duct Testing Required? No							

Compliance Certificate         Compliance Certificate         Instructions           Insulation Certificate for Residential New Construction         Insulation Certificate         Insulation Certificate           Duct Testing Affadavits         Extra Certificate         Extra Certificate         Insulation
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	y Out BetterBuiltNW's HVAC Sizing Tool: <u>https://be</u>	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,075ft2	
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 Χ ΔΤ	7,508 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	5,033 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,541 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,541 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	15,677 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing Unit 303	City of Poyallup Devictoment & Permitting Service
Building D	ISSUED PERMIT
Pioneer & Shaw, Puyallup	UA Reduction = 2.59, Proposed UA is better than baseline by 2%
Contact Information	Frei Trafic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1055 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

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

Component Performance, R occupancies		Baseline			Pro	oposed Desig	gn	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0	Γ	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	84	25.2		0.300	84	25.2	
Flat/Vaulted Ceilings U =	0.027	1,055	28.5		0.027	1,055	28.5	
Wall (above grade)  U =	0.056	1,297	72.6		0.054	1,297	70.0	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	0	0.0			0	0.0	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
	Baseli	ne UA Total	138.3		Propo	sed UA Total	135.7	
	Requ	ired Credits	4.5		Prope	osed Credits	7.0	from T
					UA Perce	nt Reduction	4.00/	
					ι	A Reduction	2.6	

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	106.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation			Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC			Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	ł	kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	6.0	

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

Conditioned Floor Area, Proposed Design 1,055 sq. ft			
Classification Small Dwelling Unit	be	City of Pe evelopment & Per	mitting Service
Notes		ISSUED F Building	Planning
		Engineering	Public Works Traffic

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

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

Vertical	Glazing Schedule							Ro	ws to Show	2
Plan	Component		Glazing		Wio	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	6	54.0	16.20
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Are	a and UA	84.0	25.2
					Vertical (	Glazing A	Area We	anted U		0.300

Vertical Glazing and Doors Area Weighted U

Flat/Vault	ed Ceilings						
Plan	Component		Attic				
ID	Description	Ref.	U		Area	UA	
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		1,055	28.5	
				Sum of Area and UA	1,055	28.5	

Walls (A	bove Grade)					
Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,297	70
				Sum of Area and UA	1,297	70

F	Floor (ov	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
		No floors in thermal envelope	NA	-			0	1
					Sum of Area and UA	0	0	

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



Belo	ow Gra	ade Walls and Slabs								
PI	lan	Component		Wall	Wall	Wall	Slab		Slab	
1	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
		Sum	ngth and UA	0	0.0		0	0	1	

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

HVAC Thermal Distribution System	Download RS-33 (2018) http://www	w.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	

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 Const	ruction Affidavit, Existing	
New Const	ruction 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://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,055 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>8,968</b> ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	136	
Envelope Heat Load Sum of UA X ΔT	6,921 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,939 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,860 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,860 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,825 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing Unit 304	City of Puyallup Development & Puyallup
Building D	ISSUED PERMIT Building Plenning
Pioneer & Shaw, Puyallup	UA Reduction = 2.73, Proposed UA is better than baseline by 2%
Contact Information	Fine Traffic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 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

Component Performance, R occupancies		Baseline		Pr	jn		
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	77	23.2	0.300	77	23.2	
Flat/Vaulted Ceilings U =	0.027	1,005	27.1	0.027	1,005	27.1	
Wall (above grade) U =	0.056	1,365	76.5	0.054	1,365	73.7	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ne UA Total	138.8	Propo	sed UA Total	136.0	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0	from Tables 406.2
				UA Perce	nt Reduction	2.0%	
					JA Reduction	2.7	

Table R	Table R406.2 Fuel Normalization Credits											
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)							
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0							

Table R4	06.3 Energy Credits				
Option No.	Category		Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope			0.0	
2	Air Leakage Control and Efficient Ventilation	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65	
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.	
4	High Efficiency HVAC Distribution System			NA	
5.1	Efficient Water Heating			0.0	
5.2-5.6	Efficient Water Heating		Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	kWh		0.0	
7	Appliance Package		0.0		
			Energy Credits	6.0	

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

Conditioned Floor Area, Proposed Design 1,005 sq. ft			
Classification Small Dwelling Unit	Development	of Puyallup & Permitting Servis	ices
Notes	Building	ED PERMIT Planning	
	Engineerin	g Public Work	-

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

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

Plan	Component		Glazing		Wic	ith	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	4	6	20.3	6.08
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Area	a and UA	77.3	23.2
					Vertical C	Glazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	iahted U		0.300

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	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

w	alls (Ab	ove Grade)					
	Plan	Component		Wall			
	ID	Description	Ref.	U		Net Area	UA
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,365	74
					Sum of Area and UA	1,365	74

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

City of F Development & P ISSUED	ermitting Servic
Building	Planning
Engineering	Public Works
Fire	Traffic

Slab on (	Grade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	No slab on grade	NA	-			(	5
							1
							1
-				Sum of Perimeter and FP	0	(	0

Below Gr	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum	of Area, Ler	ngth and UA	0	0.0		0	0	5

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

Compliance Certificate         Compliance Certificate         Instructions           Insulation Certificate for Residential New Construction         Insulation Certificate         Insulation Certificate           Duct Testing Affadavits         Extra Certificate         Extra Certificate         Insulation
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	y Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,005_ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>8,543</b> ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	136	
Envelope Heat Load Sum of UA Χ ΔΤ	6,938 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,705 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,643 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,643 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,554 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing Unit 305	City of Puralitup Development & Permitting Services
Building D	ISSUED PERMIT Building Difference Planning
Pioneer & Shaw, Puyallup	UA Reduction = 2.59, Proposed UA is better than baseline by 2%
Contact Information	Fire Traffic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1055 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

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

Component Performance, R occupancies		Baseline		Pr	oposed Desig	gn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	84	25.2	0.300	84	25.2	
Flat/Vaulted Ceilings U =	0.027	1,055	28.5	0.027	1,055	28.5	
Wall (above grade) U =	0.056	1,297	72.6	0.054	1,297	70.0	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ne UA Total	138.3	Propo	sed UA Total	135.7	
	Requ	ired Credits	4.5	Prop	osed Credits	7.0	froi
				UA Perce	nt Reduction	1.9%	
				L	JA Reduction	2.6	

Table R4	406.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	106.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation	and Efficient Ventilation C C Distribution System ng ng		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	ł	kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	6.0	

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

Conditioned Floor Area, Proposed Design 1,055 sq. ft			
Classification Small Dwelling Unit	be	City of Pe evelopment & Per	mitting Service
Notes		ISSUED F Building	Planning
		Engineering	Public Works Traffic

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

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

Vertical	Glazing Schedule							Ro	ws to Show	2
Plan	Component		Glazing		Wio	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	6	54.0	16.20
3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
Sum of Area and UA 84.0									25.2	
					Vertical (	Glazing A	Area We	anted U		0.300

Vertical Glazing and Doors Area Weighted U

Flat/Vault	ed Ceilings						
Plan	Component		Attic				
ID	Description	Ref.	U		Area	UA	
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		1,055	28.5	
				Sum of Area and UA	1,055	28.5	

Walls (A	bove Grade)					
Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,297	70
				Sum of Area and UA	1,297	70

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

Slab on (	Grade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	No slab on grade	NA	-			0	)
	·	•	•	Sum of Perimeter and FP	0	C	5



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

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

HVAC Thermal Distribution System	Download RS-33 (2018) http://www	w.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	
	s Duct Testing Required? No	

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 Const	ruction Affidavit, Existing	
New Const	ruction 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://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,055 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>8,968</b> ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	136	
Envelope Heat Load Sum of UA X ΔT	6,921 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,939 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,860 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,860 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,825 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing Unit 306	City of Puyallup Development & Permitties Services
Building D	ISSUED PERMIT Building Difference Permit
Pioneer & Shaw, Puyallup	UA Reduction = 2.73, Proposed UA is better than baseline by 2%
Contact Information	Fine Traffic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 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

Component Performance, R occupancies		Baseline		Pr	oposed Desig	gn
	U	Area	UA	U	Area	UA
Doors U =	0.300	40	12.0	0.300	40	12.0
Overhead Glazing U =	0.500	0	0.0		0	0.0
Vertical Glazing U =	0.300	77	23.2	0.300	77	23.2
Flat/Vaulted Ceilings U =	0.027	1,005	27.1	0.027	1,005	27.1
Wall (above grade) U =	0.056	1,365	76.5	0.054	1,365	73.7
Floors over Crawlspace U =	0.029	0	0.0		0	0.0
Slab on Grade F =	0.540	0	0.0		0	0.0
Below Grade Wall U =	0.042	0	0.0		0	0.0
Below Grade Slab F =	0.570	0	0.0		0	0.0
	Baseli	ne UA Total	138.8	Propo	sed UA Total	136.0
	Requ	ired Credits	4.5	Prop	osed Credits	7.0
				UA Perce	nt Reduction	2.0%
				ι	JA Reduction	2.7

Table R4	106.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R406.3 Energy Credits						
Option No.	Category	Category			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	ł	kWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	6.0	

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

Conditioned Floor Area, Proposed Design 1,005 sq. ft		
Classification Small Dwelling Unit	Development &	Puyallup Permitting Service
Notes	Building	Planning
	Fire	Public Works Traffic

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

Overhea	Overhead Glazing											
Plan	Component		Glazing		Wie	dth	Н	eight				
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA		
									0			
									0			
									0			
									0			
	a and UA	0	0	5								
Overhead Glazing Area Weighted U												

Vertical Glazing Schedule Rows to Show											
Plan	Component		Glazing		Wic	ith	Height				
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
Exemp	ot		-						-	-	
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10	
2 2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	6	4	6	20.3	6.08	
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00	
Sum of Area and UA 77.3										23.2	
					Vertical (	Glazing A	rea We	ighted U		0.300	

Vertical Glazing Area Weighted U

Flat/Vau	Ited Ceilings					
Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		1,005	27.1
				Sum of Area and UA	1,005	27.1

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,365	74

Floor (ov							
Plan	Component		Floor			UA	
ID	Description	Ref.	U		Area		
	No floors in thermal envelope	NA	-			0	
	0	0					

City of F Development & P ISSUED	ermitting Servic
Building	Planning
Engineering	Public Works
Fire	Traffic

Slab on (	Grade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	No slab on grade	NA	-			(	5
							1
							1
-				Sum of Perimeter and FP	0	(	0

	Below Grade Walls and Slabs											
	Plan	Component		Wall	Wall	Wall	Slab		Slab			
	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA			
ľ		Sum	ngth and UA	0	0.0		0	0	5			

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

Compliance Certificate         Compliance Certificate         Instructions           Insulation Certificate for Residential New Construction         Insulation Certificate         Insulation Certificate           Duct Testing Affadavits         Extra Certificate         Extra Certificate         Insulation
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	y Out BetterBuiltNW's HVAC Sizing Tool: https://be	tterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design	1,005_ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>8,543</b> ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	136	
Envelope Heat Load Sum of UA Χ ΔΤ	6,938 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X ∆T) X .018))	4,705 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,643 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,643 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	14,554 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing Unit 307	City of Payallap Development & Permitting Services
Building D	ISSUED PERMIT
Pioneer & Shaw, Puyallup	UA Reduction = 2.72, Proposed UA is better than baseline by 2%
Contact Information	Frei Trafic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

R2 Multifamily Classification: Small Dwelling Unit -- 1207 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

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

RESULTS - Comparison of Baseline and Proposed Design								
Component Performance, R occupancies		Baseline			Pro	posed Desig	In	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	139	41.6		0.300	139	41.6	
Flat/Vaulted Ceilings U =	0.027	1,207	32.6		0.027	1,207	32.6	
Wall (above grade) U =	0.056	1,360	76.1		0.054	1,360	73.4	
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	
		_						
	Basel	ine UA Total	162.3		Propo	sed UA Total	159.6	
	Requ	ired Credits	4.5		Propo	osed Credits	7.0	from Tables 406.2 and 406.3
					UA Perce	nt Reduction	1.7%	
					u	A Reduction	2.7	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	6 are ≥ tho	se required in	Section R40	6, then the home r	neets the WSEC			

Table R4	106.2 Fuel Normalization Credits				
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0

Table R4	06.3 Energy Credits			
Option No.	Category	Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope		0.0	
2	Air Leakage Control and Efficient Ventilation	Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65
3	High Efficiency HVAC	Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System		NA	
5.1	Efficient Water Heating		0.0	
5.2-5.6	Efficient Water Heating	Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy kWh		0.0	
7	Appliance Package		0.0	
		Energy Credits	6.0	

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

Conditioned Floor Area, Proposed Design 1,207 sq. ft		
Classification Small Dwelling Unit	City of F Development & P	ermitting Services
Notes	Building	PERMIT
	Engineering	Public Works Traffic

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

Overhea	d Glazing										
Plan	Component		Glazing		Wie	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		1
						Sum	of Are	a and UA	0	0	
				c	overhead (	Glazing A	Area We	ighted U			]

Plan	Component		Glazing		Wid	lth	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt			-						-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	6	81.0	24.30
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
7	U=0.30 (Code Baseline)	Table 406.2	0.30	1	7	0	2	0	14.0	4.20
						Sum	of Area	and UA	138.5	41.6
					Vertical C	Slazing A	rea We	ighted U		0.300
				Vertical G	lazing and	Doors A	rea We	iahted U		0.300

Plan	Component		Attic		
ID	Description	Ref.	U	Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027	1,207	32.6

Plan	Component		Wall		
ID	Description	Ref.	U	Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054	1,360	73

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

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

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

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

I	Ventilation Requirements			
I	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						

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://bet	terbuiltnw.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	1,207 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	<b>10,260</b> ft3	
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	160	
Envelope Heat Load Sum of UA X AT	8,138 Btu / Hour	
<b>Air Leakage Heat Load</b> ((Volume X 0.6) X ΔT) X.018))	5,651 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,789 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,789 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	17,236 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

Project Information	Messages / Results *
East Town Crossing Unit 308	City of Poyallup Devictoment & Permitting Service
Building D	ISSUED PERMIT
Pioneer & Shaw, Puyallup	UA Reduction = 2.76, Proposed UA is better than baseline by 2%
Contact Information	Frei Trafic
Synthesis 9, LLC	
Brett Lindsay	
blindsay@synthesis9.com	Whole House Mechanical Ventilation Airflow Rate: 70 CFM with Run Time Percent of 100%, Balanced, Distributed
253-468-4117	
	* Results assume your inputs are complete and correct. Results do not constitute an approval. Analysis should be reviewed by your AHJ.

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

New Construction R2 Multifamily Classification: Small Dwelling Unit -- 1075 sq. ft. Baseline Description: Code Baseline - Baseline and proposed window areas are equal.

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

Component Performance, R occupancies		Baseline		Pi	roposed Desig	jn	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	118	35.3	0.300	118	35.3	
Flat/Vaulted Ceilings U =	0.027	1,075	29.0	0.027	1,075	29.0	
Wall (above grade) U =	0.056	1,381	77.3	0.054	1,381	74.6	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ne UA Total	153.7	Propo	osed UA Total	150.9	
	Required Credits			Prop	osed Credits	7.0	from Tables 406.2 and 4
				UA Perce	ent Reduction	1.8%	
					UA Reduction	2.8	

Table R4	Table R406.2 Fuel Normalization Credits									
System No.	Full Description	Select System Type	Fuel Normalization Credits (406.2)	Energy Credits (406.3)	Total Credits (406.2 & 406.3)					
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.3.2(2) OR Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590. Heat pump with electric resistance or fossil-fuel supplemental heat requires compliance with WSEC 403.1.2 "Heat Pump Supplementary Heat". Packaged Terminal Heat Pumps (PTAC-HP) requires an HSPF tested value (See SBC Interpretation dated December 2020).	Heat Pump, air-to-air or air to water	1.0	6.0	7.0					

Table R4	06.3 Energy Credits					
Option No.	Category			Select Options	Energy Credits	Brief Description of Selected Options*
1	Efficient Building Envelope				0.0	
2	Air Leakage Control and Efficient Ventilation		Option 2.2	1.5	2.0 ACH50 / Heat Recovery Ventilation min eff 65% $$ / For R2, 0.25 cfm per ft2 at 50 Pa / HRV with min SHR eff of 0.65 $$	
3	High Efficiency HVAC			Option 3.4	2.0	Ductless Split System, Zonal Control. Min HSPF of 10.
4	High Efficiency HVAC Distribution System				NA	
5.1	Efficient Water Heating				0.0	
5.2-5.6	Efficient Water Heating			Option 5.5	2.5	NEEA Tier 3 heat pump water heater
6	Renewable Electric Energy	k	κWh		0.0	
7	Appliance Package				0.0	
				Energy Credits	6.0	

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

Conditioned Floor Area, Proposed Design	1,075 sq. ft		
Classification	Small Dwelling Unit	City of I Development & P ISSUED	
Notes		Building	PERMIT
		Engineering	Public Works Traffic

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

Plan	Component		Glazing		Wio	dth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
									0	
									0	
									0	
									0	
									0	
						Sum	of Area	a and UA	0	0
				c	verhead (	Glazing A	Area We	iahted U		

Vertica	I Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wio	lth	He	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	t		-						-	-
1 1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	6	27.0	8.10
2 2	U=0.30 (Code Baseline)	Table 406.2	0.30	3	4	6	4	6	60.8	18.23
3 3	U=0.30 (Code Baseline)	Table 406.2	0.30	1	5	0	6	0	30.0	9.00
						Sum	of Area	a and UA	117.8	35.3
					Vertical (	Glazing A	rea We	iahted U		0.300

Vertical Glazing and Doors Area Weighted U

ventical	Olazing	and bot	is Alea	weightet	.0

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

١	Nalls (Ab	ove Grade)					
	Plan	Component		Wall			
	ID	Description	Ref.	U		Net Area	UA
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,381	75
Γ							
Γ							
					Sum of Area and UA	1,381	75

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

City of F Development & P ISSUED	ermitting Servic
Building	Planning
Engineering	Public Works
Fire	Traffic

Slab on (	Grade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
	No slab on grade	NA	-			(	5
							1
							1
-				Sum of Perimeter and FP	0	(	0

	Below Gr	ade Walls and Slabs								
	Plan	Component		Wall	Wall	Wall	Slab		Slab	
	ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
ľ		Sum	of Area, Ler	ngth and UA	0	0.0		0	0	5

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

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (∆T)	51 F
Conditioned Floor Area, Proposed Design	1,075 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	151
Envelope Heat Load Sum of UA X ∆T	7,697 Btu / Hour
<b>Air Leakage Heat Load</b> ((Volume X 0.6) X ∆T) X .018))	5,033 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,729 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,729 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	15,912 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	