Project Info	rmation
	East Town Crossing, Unit 101
	Building G
	Pioneer & Shaw, Puyallup
Contact Info	rmation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com

Messages / Results *

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

Development & Permitting Service
ISSUED PERMIT
Building Planning
Engineering Public Works

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

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

What code compliance pathway are you using?
Project Building Type?
Occupancy Type?
Code Version?
Classification:
Baseline Description:
About Your Selection:

What code compliance pathway are you using?
Prescriptive Path Compliance with Option 1 (preferred)
New Construction
R2 Multifamily
WSEC 2018
Small Dwelling Unit -- 795 sq. ft.
Code 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	116	34.7	0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,207	67.6	0.054	1,207	65.2	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	134	72.1	0.540	134	72.1	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	186.4	Propo	sed UA Total	184.0	
	Requi	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 and 406.3
		_		UA Perce	nt Reduction	4.00/	
				ı	JA Reduction	2.4	

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

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

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

THERMAL ENVELOPE DETAILS - Proposed Design

Conditioned Floor Area, Proposed Design		City of I Development & P	Puyallup Permitting Services O PERMIT
Classification	Small Dwelling Unit	Building	Planning
Notes		Engineering	Public Works Traffic

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

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

Plan	Il Glazing Schedule Component		Glazing		Wid	th	Нс	eight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet		Area	UA
Exemp	ot .		-						-	-
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
						Sum	of Area	a and UA	115.5	34.7
					Vertical G	lazing A	rea We	ighted U		0.300
				Vertical GI	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	
					Sum of Area and UA	0	0.0	
ı								

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,207	65
				Sum of Area and UA	1,207	65

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

2

Slab	on G	Grade (less than 2 feet below grade)						
	lan	Component		Slab				
	D	Description	Ref.	F	8	Slab Perim	FP	
		R10 2' vertical (Code Baseline)	10-2	0.540		134	7	72
					Sum of Perimeter and FP	134	7	72



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

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

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

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

Heating System Sizing - Proposed Design	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/res	sources/hvac-sizing-tool
Nearest Weather Station	Puyallup	
Indoor Design Temperature	70 F	
Outdoor Design Temperature	19 F	
Design Temperature Difference (ΔT)	51 F	
Conditioned Floor Area, Proposed Design		
Conditioned Volume	6,758 ft3	
Leave blank to use default of 8.5 ft. ceiling height		
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	184	
Envelope Heat Load Sum of UA X ΔT	9,383 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	3,722 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,105 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,105 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	16,382 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

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

Messages / Results * UA Reduction = 2.26, Proposed UA is better than baseline by 1% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 765 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	116	34.7		0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,128	63.1		0.054	1,128	60.9	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	126	67.9		0.540	126	67.9	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
		_						
	Baseli	ne UA Total	177.7		Propo	sed UA Total	175.5	
	Requ	ired Credits	4.5		Prop	osed Credits	6.5	from Tables 406.2 and 406.3
		_			UA Perce	nt Reduction	4.00/	
						JA Reduction	2.3	
e Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	16 ara > thac	o roquired in	Saction P40	£ than the home m			2.3	

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 765 sq. ft	Development	of Puyallup t & Permitting Services UED PERMIT
Classification Small Dwelling Unit	Building	
Notes	Engineerin	g Public Works Traffic

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

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

Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
						Sum	of Area	and UA	115.5	34.7
Vertical Glazing Area Weighted U 0.300										
				Vertical G	lazing and	Doors A	rea Wei	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		1,128	61
				Sum of Area and UA	1,128	61

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

2

Slab on Grade (less than 2 feet below grade)							
Plan	Component	B./	Slab	84.5			
ID	Description	Ref.	F	Slab Pe	rım	FP	_
	R10 2' vertical (Code Baseline)	10-2	0.540		126	6	86
				Sum of Perimeter and FP	126	F	88



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			gth and UA	0	0.0		0	0	

Ventilation Requirements		
Number of Bedrooms	2	
Run-Time Percent in Each 4-Hour Segment	100%	
Is the system Balanced?	Balanced	Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	d Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	on 403
Whole House Mechanical Ventilation Airflow Rate	55	5 CFM

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	765 ft2 6,503 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window Envelope Heat Load	8,949 Btu / Hour
Sum of UA X ΔT	
Air Leakage Heat Load ((Volume X 0.6) X \(\Data \text{T} \) \(\text{X} \) .018))	3,582 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,531 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,531 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	15,664 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

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

Wessages / Results *

UA Reduction = 2.17, Proposed UA is better than baseline by 1%

Whole House Mechanical Ventilation Airflow Rate: 45 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
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 624 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	
Overhead Glazing U = 0.500 0 0.0 Vertical Glazing U = 0.300 48 14.4 Flat/Vaulted Ceilings U = 0.027 0 0.0 Wall (above grade) U = 0.056 1.083 60.6 Floors over Crawlspace U = 0.590 115 62.0 Slab on Grade F = 0.540 115 62.0 Below Grade Wall U = 0.042 0 0.0 Below Grade Slab F = 0.570 0 0.0 Baseline UA Total Required Credits 4.5 Proposed UA Total 6.5 From Tables 406.2		U	Area	UA	U	Area	UA	
Vertical Glazing U = 0.300	Doors U =	0.300	40	12.0	0.300	40	12.0	
Flat/Vaulted Ceilings U = 0.027 0 0.0 0.0 0.0 0.0	Overhead Glazing U =	0.500	0	0.0		0	0.0	
Wall (above grade) U = 0.056	Vertical Glazing U =	0.300	48	14.4	0.300	48	14.4	
Floors over CrawIspace U = 0.029 0 0.0 0.0 0.0 Slab on Grade F = 0.540 115 62.0 0.540 115 62.0 Below Grade Wall U = 0.042 0 0.0 0 0.0 0.0 Below Grade Slab F = 0.570 0 0.0 0.0 0.0 Baseline UA Total 149.0 Proposed UA Total 146.9 Required Credits 4.5 Proposed Credits 6.5 from Tables 406.2	Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Slab on Grade F	Wall (above grade) U =	0.056	1,083	60.6	0.054	1,083	58.5	
Below Grade Wall U = 0.042	Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Below Grade Slab F = 0.570 0 0.0 0 0.0	Slab on Grade F =	0.540	115	62.0	0.540	115	62.0	
Baseline UA Total 149.0 Proposed UA Total 146.9 Required Credits 4.5 Proposed Credits 6.5 from Tables 406.2 and the second secon	Below Grade Wall U =	0.042	0	0.0		0	0.0	
Required Credits 4.5 Proposed Credits 6.5 from Tables 406.2 a	Below Grade Slab F =	0.570	0	0.0		0	0.0	
Required Credits 4.5 Proposed Credits 6.5 from Tables 406.2 a			_					
1.00		Baseli	ne UA Total	149.0	Propo	sed UA Total	146.9	
		Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 and 406.3
UA Percent Reduction 1.5%					UA Perce	ent Reduction		
UA Reduction 2.2					ı	JA Reduction	2.2	

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

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 624 sq. ft

Classification Small Dwelling Unit

Notes Classification Small Dwelling Unit

Classification Small Dwelling Unit

Notes Classification Small Dwelling Unit

Plan	Component		Door		Wid	ith	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								0	0.0
Α	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
В	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

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

١	/ertical (Glazing Schedule							Ro	ws to Show	2
	Plan	Component		Glazing		Wic	ith	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
L	Exempt			-						-	-
1 3		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
6	i	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	0	6	0	24.0	7.20
Sum of Area and UA 4									48.0	14.4	
Vertical Glazing Area Weighted U 0.300											
					Vertical G	lazing and	Doors A	rea We	ighted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,083	58
				Sum of Area and UA	1,083	58

FI	loor (ove	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
			<u> </u>		Sum of Area and UA	0	0	

Plan	Component		Slab			
ID	Description	Ref.	F	\$	Slab Perim	FP
	R10 2' vertical (Code Baseline)	10-2	0.540		115	62
				Sum of Perimeter and FP	115	62



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	gth and UA	0	0.0		0	0	
									J

Ventilation Requirements			
Number of Bedrooms	1		
Run-Time Percent in Each 4-Hour Segment	100%		
Is the system Balanced?	Balanced		Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed		Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	403	
Whole House Mechanical Ventilation Airflow Rate	45	CFM	
		-	

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

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

eating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	624 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	5,304 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	147
Envelope Heat Load Sum of UA X ΔT	7,490 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	2,921 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,412 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,412 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	13,015 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Info	rmation
	East Town Crossing, Unit 104
	Building G
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com

Messages / Results * UA Reduction = 2.29, Proposed UA is better than baseline by 1% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 732 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		Р	roposed 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	63	18.9	0.300	63	18.9	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,144	64.1	0.054	1,144	61.8	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	122	66.0	0.540	122	66.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		<u></u>					
	Baseli	ine UA Total	161.0	Prop	osed UA Total	158.7	
	Requ	ired Credits	4.5	Proj	osed Credits	6.5	from Tables 406.2 and 40
		_		UA Perc	ent Reduction	4 407	
					UA Reduction	2.3	

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 732 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Specification Small Dwelling Unit

Represent Specification Small Dwelling Unit

Notes

Total City of Psystible Development & President Specification Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystian Specification Small Dwelling Unit

Tot

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

D Description Ref. U Qt. Feet Inch Feet Inch Area UA UA UA UA UA UA UA U	Plan	Component		Glazing		Wic	lth	He	ight		
Sum of Area and IJA 0 0	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Sum of Area and UA 0 0										0	
Sum of Area and IJA 0 0										0	
Sum of Area and IIA 0 0										0	
Sum of Area and UA 0 0										0	
Sum of Area and IIA 0 0										0	
	Sum of Area and UA 0 0										

Vertical Glazing Schedule Rows to Show 2												
	Plan	Component		Glazing		Wic	ith	He	ight			
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
	Exempt			-						-	-	
1 3	3	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40	
2 5	5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	6	0	15.0	4.50	
Sum of Area and UA 63.0							18.9					
Vertical Glazing Area Weighted U 0.300												
Vertical Glazing and Doors Area Weighted U 0.300												

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

Wal	lls (Ab	ove Grade)						
Р	Plan	Component		Wall				
	ID	Description	Ref.	U		Net Area	UA	
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,144	62	
			•		Sum of Area and UA	1,144	62	
					•			<u> </u>

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

Plan	Component		Slab			
ID	Description	Ref.	F		Slab Perim	FP
	R10 2' vertical (Code Baseline)	10-2	0.540		122	66
				Sum of Perimeter and FP	122	66



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

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

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

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

eating System Sizing - Proposed Design	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	732 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,222 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	159
Envelope Heat Load Sum of UA X ΔT	8,096 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,427 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,523 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,523 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	14,404 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information				
	East Town Crossing, Unit 105			
	Building G			
	Pioneer & Shaw, Puyallup			
Contact Info	ormation			
	Synthesis 9, LLC			
	Brett Lindsay			
	blindsay@synthesis9.com			
	253-468-4117			

Messages / Results * UA Reduction = 2.17, Proposed UA is better than baseline by 1% Whole House Mechanical Ventilation Airflow Rate: 45 CFM with Run Time Percent of 100%, Balanced, Distributed

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

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

Component Performance, R occupancies		Baseline			Prop	osed Desig	n	
	U	Area	UA	U	l A	Area	UA	
Doors U =	0.300	40	12.0	0.3	00	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	48	14.4	0.3	00	48	14.4	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,083	60.6	0.0	54	1,083	58.5	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	115	62.0	0.5	40	115	62.0	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
		_						
	Baseli	ne UA Total	149.0		Propose	d UA Total	146.9	
	Requ	ired Credits	4.5		Propose	ed Credits	6.5	from Tables 406.2 and 406
		_		UA	Percent	Reduction	1.5%	
					UA	Reduction	2.2	

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

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

THERMAL ENVELOPE DETAILS - Proposed Design	

Conditioned Floor Area, Proposed Design 624 sq. ft		
Classification Small Dwelling Unit		
Notes	Building Engineering	Planning Public Works
	Fire	Traffic

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

Overhea	d Glazing										
Plan	Component		Glazing		Wic	ith	Не	ight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Area	and UA	0	0	0
				C	Overhead (Glazing A	rea We	ighted U			

Vertical Glazing Schedule Rows to Show 2								2			
	Plan	Component		Glazing		Wic	ith	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
L	Exempt			-						-	-
1 3		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
6	i	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	0	6	0	24.0	7.20
							Sum	of Area	a and UA	48.0	14.4
						Vertical C	Glazing A	rea We	ighted U		0.300
					Vertical G	lazing and	Doors A	rea We	ighted U		0.300

Plan ID	Component Description	Ref.	Attic U	Area	UA
	No ceiling/roof in thermal envelope	NA	-	Area	0.0
	No centing/root in thermal envelope	INA	-		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		1,083	58
				Sum of Area and UA	1,083	58

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

	Slab on Grade (less than 2 feet below grade)							
	Plan	Component		Slab				П
	ID	Description	Ref.	F		Slab Perim	FP	
		R10 2' vertical (Code Baseline)	10-2	0.540		115	62	2
								Ī
ı								Ī
ı								Ī
					Sum of Perimeter and FP	115	62	



В	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	1		
Run-Time Percent in Each 4-Hour Segment	100%		
Is the system Balanced?	Balanced		Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed		Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	403	
Whole House Mechanical Ventilation Airflow Rate	45	CFM	

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	624_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	5,304 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	147
Envelope Heat Load Sum of UA X AT	7,490 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	2,921 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,412 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,412 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	13,015 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information					
	East Town Crossing, Unit 106				
	Building G				
	Pioneer & Shaw, Puyallup				
Contact Info	ormation				
	Synthesis 9, LLC				
	Brett Lindsay				
	blindsay@synthesis9.com				

Messages / Results * UA Reduction = 2.29, Proposed UA is better than baseline by 1% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 732 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	ın	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	63	18.9		0.300	63	18.9	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,144	64.1		0.054	1,144	61.8	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	122	66.0		0.540	122	66.0	
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	161.0		Propo	sed UA Total	158.7	
	Requ	ired Credits	4.5		Propo	sed Credits	6.5	from Tables 406.2 and 406
		_			UA Percei	nt Reduction	4 407	
UA Reduction 2.3								

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

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

THERMAL ENVELOPE DETAILS - Proposed Design	

Conditioned Floor Area, Proposed Design 732 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Specification Small Dwelling Unit

Represent Specification Small Dwelling Unit

Notes

Total City of Psystible Development & President Specification Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystian Specification Small Dwelling Unit

Tot

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

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

Vertical Glazing Schedule Rows to Show 2								2				
	Plan	Component		Glazing		Wic	ith	He	ight			
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
	Exempt			-						-	-	
1 3	3	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40	
2 5	5	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	6	0	15.0	4.50	
							Sum	of Area	a and UA	63.0	18.9	
Vertical Glazing Area Weighted U 0.300												
					Vertical G	lazing and	Doors A	rea We	ighted U		0.300	

Plan ID	Component Description	Ref.	Attic U		Area	UA	
	No ceiling/roof in thermal envelope	NA			Area	0.0	
	ito cennigroot in dienna envelope	10.0				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		1,144	62
				Sum of Area and UA	1,144	62

FI	loor (ove	er crawl or exterior)						
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
			<u> </u>		Sum of Area and UA	0	0	

	Slab on G	Grade (less than 2 feet below grade)						
	Plan	Component		Slab				
L	ID	Description	Ref.	F		Slab Perim	FP	1
		R10 2' vertical (Code Baseline)	10-2	0.540		122	66	
					Sum of Perimeter and FP	122	66	
					_			



В	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	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	V	'erify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	V	erify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	403	
Whole House Mechanical Ventilation Airflow Rate	55	CFM	

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

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

eating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	732 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,222 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	159
Envelope Heat Load Sum of UA X ΔT	8,096 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,427 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	11,523 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	11,523 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	14,404 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Info	rmation
	East Town Crossing, Unit 107
	Building G
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	253-468-4117

Messages / Results * UA Reduction = 2.41, Proposed UA is better than baseline by 1% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

Component Performance, R occupancies		Baseline		Pro	posed Desig	n	
	U	Area	UA	 U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	116	34.7	0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,207	67.6	0.054	1,207	65.2	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	134	72.1	0.540	134	72.1	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ne UA Total	186.4	Propos	sed UA Total	184.0	
	Requ	ired Credits	4.5	Propo	sed Credits	6.5	from Tables 406.2 and 406
		<u>-</u>		UA Percer	t Reduction	4.00/	
				U	A Reduction	2.4	

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

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

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

Conditioned Floor Area, Proposed Design 795 sq. ft		
Classification Small Dwelling Unit	City of I Development & P ISSUED	Permitting Services
Notes	Building Engineering	Planning Public Works
	Fire	Traffic

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

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

Vertical	I Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	t									
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
						Sum	of Area	and UA	115.5	34.7
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	ighted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,207	65
				Sum of Area and UA	1,207	65

F	Floor (over crawl or exterior)							
	Plan	Component		Floor			UA	
	ID	Description	Ref.	U		Area		
1								
_	Sum of Area and UA							

Slab on Grade (less than 2 feet below grade)							
Plan ID	Component	Def	Slab		Olah Basisa		
	Description	Ref.	Г		Slab Perim		
	R10 2' vertical (Code Baseline)	10-2	0.540		134	72	
				Sum of Perimeter and FP	134	72	
				<u> </u>			



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

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

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	795_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	184
Envelope Heat Load Sum of UA X ΔT	9,383 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	3,722 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	13,105 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	13,105 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	16,382 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Info	rmation
	East Town Crossing, Unit 108
	Building G
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com

Messages / Results * UA Reduction = 2.26, Proposed UA is better than baseline by 1% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 765 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pro	oposed Desig	n	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	116	34.7	0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,128	63.1	0.054	1,128	60.9	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	126	67.9	0.540	126	67.9	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ne UA Total	177.7	Propo	sed UA Total	175.5	
	Requ	ired Credits	4.5	Propo	sed Credits	6.5	from Tables 406.2 and 406
		_		UA Percei	nt Reduction	4 00/	
				u	A Reduction	2.3	

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

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

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

Overhead Glazing											
Plan	Component		Glazing		Wic	ith	Не	ight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
Sum of Area and UA 0 0 0											
				C	Overhead (Glazing A	rea We	ighted U			
						_		_			

Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								-	-
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
						Sum	of Area	and UA	115.5	34.7
Vertical Glazing Area Weighted U 0.3									0.300	
				Vertical G	lazing and	Doors A	rea Wei	ighted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,128	61
				Sum of Area and UA	1,128	

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

2

	Plan	Component		Slab			
	ID	Description	Ref.	F		Slab Perim	FP
		R10 2' vertical (Code Baseline)	10-2	0.540		126	68
ſ							
ſ							
ľ							
					Sum of Perimeter and FP	126	68



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

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

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

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

ting System Sizing - Proposed Design	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-si
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,503 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	175
Envelope Heat Load Sum of UA X AT	8,949 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta \text{T} \) X \(.018 \))	3,582 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	12,531 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	12,531 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	15,664 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing, Unit 201 Building G Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com 253-468-4117

Messages / Results *

UA Reduction = 2.41, Proposed UA is better than baseline by 2%

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

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 795 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	116	34.7		0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,207	67.6		0.054	1,207	65.2	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	0	0.0			0	0.0	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
		_						
	Baseli	ine UA Total	114.3		Propo	sed UA Total	111.8	
	Requ	ired Credits	4.5		Prop	osed Credits	6.5	from Tables 406.2 and 406.
		_			UA Perce	nt Reduction	0.407	
					ι	JA Reduction	2.4	
e Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40								

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

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

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

THERMAL ENVELOPE DETAILS - Proposed Design	

Conditioned Floor Area, Proposed Design 795 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Services

Special Spe

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

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

Vertical	I Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	t									
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
						Sum	of Area	and UA	115.5	34.7
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	ighted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,207	65
				Sum of Area and UA	1,207	65

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

	rade (less than 2 feet below grade)						
Plan	Component		Slab				
ID	Description	Ref.	F		Slab Perim	FP	
				Sum of Perimeter and FP	0		0



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

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

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	795 ft2 6,758 ft3
HVAC System Type Location of HVAC Distribution System	Heat Pump Unducted
Sum of UA, including exempt door and window	112
Envelope Heat Load Sum of UA X ∆T	5,704 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,722 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,426 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	9,426 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	11,782 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Info	rmation
	East Town Crossing, Unit 202
	Building G
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	hlindsav@synthesis9.com

Messages / Results * UA Reduction = 2.26, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP

What code compliance pathway are you using?
Project Building Type?
Occupancy Type?
Code Version?
Classification:
Baseline Description:
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 Desi	•	
_	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	116	34.7		0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	0	0.0			(0.0	
Wall (above grade) U =	0.056	1,128	63.1		0.054	1,128	60.9	
Floors over Crawlspace U =	0.029	0	0.0			C	0.0	
Slab on Grade F =	0.540	0	0.0			(0.0	
Below Grade Wall U =	0.042	0	0.0			(0.0	
Below Grade Slab F =	0.570	0	0.0			(0.0	
				_				
	Baseli	ine UA Total	109.8		Propo	sed UA Tota	107.5	
	Regu	ired Credits	4.5		Prop	osed Credits	6.5	from Tables 406.2 and 406.3
	•	<u> </u>			IIA Perce	nt Reduction	0.407	Tubics 400.2 and 400.0
						JA Reduction		
						JA REGUCTION	2.3	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	06 are ≥ tho	se required in	Section R40	6, then the home m	eets the WSE	C.		

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 765 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Services

Special Spe

Plan	Component		Door		Wid	ith	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								0	0.0
Α	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
В	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

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

Vertica	l Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ıt								-	ı
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
						Sum	of Area	and UA	115.5	34.7
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	iahted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,128	61
				Sum of Area and UA	1,128	

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

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



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

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

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

ating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://bette	rbuiltnw.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	
O	705 80	
Conditioned Floor Area, Proposed Design	765 ft2	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,503 ft3	
· ·		
HVAC System Type	Heat Pump	
Location of HVAC Distribution System	Unducted	
Sum of UA, including exempt door and window	108	
Envelope Heat Load Sum of UA X AT	5,485 Btu / Hour	
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T) X \(.018 \))	3,582 Btu / Hour	
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,066 Btu / Hour	
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	9,066 Btu / Hour	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1		
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	11,333 Btu / Hour	
Building and Duct Heat Loss X 1.40 for all other systems		

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

Wessages / Results *

UA Reduction = 2.17, Proposed UA is better than baseline by 2%

Whole House Mechanical Ventilation Airflow Rate: 45 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 628 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	48	14.4		0.300	48	14.4	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,083	60.6		0.054	1,083	58.5	
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	87.0		Propo	sed UA Total	84.9	
	Requ	ired Credits	4.5		Prop	osed Credits	6.5	from Tables 406.2 and 406.
		_			UA Perce	nt Reduction	2.5%	
					ı	JA Reduction	2.2	
ne Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40								

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 628 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Prysible Development & Princing Services

Special Speci

Plan	Component		Door		Wid	ith	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								0	0.0
Α	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
В	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

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

١	/ertical (Glazing Schedule							Ro	ws to Show	2
	Plan	Component		Glazing		Wic	ith	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
L	Exempt			-						-	-
1 3		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
6	i	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	0	6	0	24.0	7.20
							Sum	of Area	a and UA	48.0	14.4
Vertical Glazing Area Weighted U 0.300											
					Vertical G	lazing and	Doors A	rea We	ighted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,083	58
		•		Sum of Area and UA	1,083	58

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

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



Belo	ow Gra	ade Walls and Slabs								
PI	lan	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	1		
Run-Time Percent in Each 4-Hour Segment	100%		
Is the system Balanced?	Balanced		Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed		Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	403	
Whole House Mechanical Ventilation Airflow Rate	45	CFM	
		-	

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

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

ating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	628 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	5,338 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	85
Envelope Heat Load Sum of UA X ΔT	4,329 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	2,940 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	7,269 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	7,269 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	9,086 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Info	rmation
	East Town Crossing, Unit 204
	Building G
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com

Messages / Results * UA Reduction = 2.29, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 732 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

RESULTS - Comparison of Baseline and Proposed Design								
Component Performance, R occupancies		Baseline			Pro	posed Desig	jn	
	U	Area	UA	_	U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	63	18.9		0.300	63	18.9	
Flat/Vaulted Ceilings U =	0.027	0	0.0			0	0.0	
Wall (above grade) U =	0.056	1,144	64.1		0.054	1,144	61.8	
Floors over Crawlspace U =	0.029	0	0.0			0	0.0	
Slab on Grade F =	0.540	0	0.0			0	0.0	
Below Grade Wall U =	0.042	0	0.0			0	0.0	
Below Grade Slab F =	0.570	0	0.0			0	0.0	
		_						
	Baseli	ine UA Total	95.0		Propo	sed UA Total	92.7	
	Requ	ired Credits	4.5		Propo	sed Credits	6.5	from Tables 406.2 and 406.3
		_			UA Percei	nt Reduction	0.407	
					U	A Reduction	2.3	
If the December of the Arthur Tarantal Manager of the Arthur T			0					
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	of are ≥ thos	se required in	Section R40	6, then the home me	eets 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	5.5	6.5

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 732 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Specification Small Dwelling Unit

Represent Specification Small Dwelling Unit

Notes

Total City of Psystible Development & President Specification Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystian Specification Small Dwelling Unit

Tot

Plan	Component		Door		Wid	ith	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								0	0.0
Α	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
В	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Overhea Plan	d Glazing Component		Glazing		Wic	ith	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet		Area	UA	
									0		
									0		
									0		
									0		
									0		
Sum of Area and UA 0 0											
Overhead Glazing Area Weighted U											
					overnead (siazing A	rea we	igntea U			

Vertical Glazing Schedule Rows to Show 2							2				
	Plan	Component		Glazing		Wic	lth	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
	Exempt			-						-	-
1 3	1	U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
2 5		U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	6	0	15.0	4.50
							Sum	of Area	a and UA	63.0	18.9
						Vertical (Slazing A	rea We	ighted U		0.300
					Vertical G	lazing and	Doors A	rea We	ighted U		0.300

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

Wal	Walls (Above Grade)							
Р	Plan	Component		Wall				
	ID	Description	Ref.	U		Net Area	UA	
		R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,144	62	
			•		Sum of Area and UA	1,144	62	
					•			<u> </u>

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

Slab on G	Grade (less than 2 feet below grade)						
Plan ID	Component Description	Ref.	Slab 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, Len	gth and UA	0	0.0		0	0	
									J

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

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

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

ating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	732_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,222 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	93
Envelope Heat Load Sum of UA X ΔT	4,728 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X ΔT) X .018))	3,427 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	8,155 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	8,155 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	10,194 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Info	rmation
	East Town Crossing, Unit 205
	Building G
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	253-468-4117

Messages / Results * UA Reduction = 2.17, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 45 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 628 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pro	posed Desig	n	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	48	14.4	0.300	48	14.4	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,083	60.6	0.054	1,083	58.5	
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	ine UA Total	87.0	Propos	sed UA Total	84.9	
	Requ	ired Credits	4.5	Propo	sed Credits	6.5	from Tables 406.2 and 406.3
				UA Percer	nt Reduction	2.5%	
				U	A Reduction	2.2	

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 628 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Prysible Development & Princing Services

Special Speci

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

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

١	/ertical (Glazing Schedule							Ro	ws to Show	2
	Plan	Component		Glazing		Wic	ith	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
L	Exempt			-						-	-
1 3		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
6	i	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	0	6	0	24.0	7.20
Sum of Area and UA							48.0	14.4			
Vertical Glazing Area Weighted U								0.300			
					Vertical G	lazing and	Doors A	rea We	ighted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,083	58
		•		Sum of Area and UA	1,083	58

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

Slab on G	Grade (less than 2 feet below grade)						
Plan ID	Component Description	Ref.	Slab 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	gth and UA	0	0.0		0	0	

Ventilation Requirements			
Number of Bedrooms	1		
Run-Time Percent in Each 4-Hour Segment	100%		
Is the system Balanced?	Balanced		Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed		Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	403	
Whole House Mechanical Ventilation Airflow Rate	45	CFM	
		-	

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

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

leating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	628 ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	5,338 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	85
Envelope Heat Load Sum of UA X ΔT	4,329 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X AT) X .018))	2,940 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	7,269 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	7,269 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	9,086 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing, Unit 206 Building G Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com

253-468-4117

Wessages / Results *

UA Reduction = 2.29, Proposed UA is better than baseline by 2%

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

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 732 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	63	18.9	0.300	63	18.9	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,144	64.1	0.054	1,144	61.8	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ine UA Total	95.0	Propo	sed UA Total	92.7	
	Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 and 406.
		_		UA Perce	nt Reduction	2.4%	
				,	JA Reduction	2.3	
e Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40							

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

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

THERMAL ENVELOPE DETAILS - Proposed Design	

Conditioned Floor Area, Proposed Design 732 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Specification Small Dwelling Unit

Represent Specification Small Dwelling Unit

Notes

Total City of Psystible Development & President Specification Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystian Specification Small Dwelling Unit

Tot

Plan	Component		Door		Wid	ith	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								0	0.0
Α	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
В	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Overhea Plan	d Glazing Component		Glazing		Wic	ith	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet		Area	UA	
									0		
									0		
									0		
									0		
									0		
Sum of Area and UA 0 0											
				c	Overhead (Glazing A	rea We	ighted U			
				,	vernead (Jiazing A	vied VVE	ngnied U			

Vertical Glazing Schedule Rows to Show 2							2				
	Plan	Component		Glazing		Wic	ith	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
	Exempt			-						-	-
1 3		U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
2 5		U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	6	0	15.0	4.50
							Sum	of Area	a and UA	63.0	18.9
Vertical Glazing Area Weighted U 0.300											
Vertical Glazing and Doors Area Weighted U 0.300											

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,144	62
				Sum of Area and UA	1,144	62

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

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



Below G	Below Grade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum of Area, 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	ion 403
Whole House Mechanical Ventilation Airflow Rate	55	55 CFM

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,222 市3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	93
Envelope Heat Load Sum of UA X AT	4,728 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta T \) X .018))	3,427 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	8,155 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	8,155 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	10,194 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing, Unit 207 Building G Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com

253-468-4117

Messages / Results * UA Reduction = 2.41, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 795 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		Pro	posed Desig	ın	
	U	Area	UA	 U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	116	34.7	0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,207	67.6	0.054	1,207	65.2	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ne UA Total	114.3	Propo	sed UA Total	111.8	
	Requ	ired Credits	4.5	Propo	sed Credits	6.5	from Tables 406.2 and 406
		<u>-</u>		UA Perce	nt Reduction	0.40/	
				u	A Reduction	2.4	

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 795 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Services

Special Spe

Plan	Component		Door		Wid	ith	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								0	0.0
Α	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
В	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Overhea Plan	d Glazing Component		Glazing		Wic	ith	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet		Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	
				c	Overhead (Glazing A	rea We	ighted U			
				,	vernead (Jiazing A	vied VVE	ngnied U			

Vertical	I Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	t									
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
						Sum	of Area	and UA	115.5	34.7
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	ighted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,207	65
				Sum of Area and UA	1,207	65

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

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



Below Gra	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Su	n 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	d Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	on 403
Whole House Mechanical Ventilation Airflow Rate	55	5 CFM

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design Conditioned Volume	795 ft2 6,758 ft3
Leave blank to use default of 8.5 ft. ceiling height HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	112
Envelope Heat Load Sum of UA X ΔΤ	5,704 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	3,722 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,426 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	9,426 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	11,782 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing, Unit 208 Building G Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com

253-468-4117

Messages / Results *

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

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

* 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 764 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	ın	
	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	116	34.7	0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	0	0.0		0	0.0	
Wall (above grade) U =	0.056	1,128	63.1	0.054	1,128	60.9	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ine UA Total	109.8	Propo	sed UA Total	107.5	
	Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 and 406.3
		_		UA Perce	nt Reduction	2.1%	
				ι	JA Reduction	2.3	

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 764 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Services

Special Spe

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

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

Vertica	l Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ıt								-	ı
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
						Sum	of Area	and UA	115.5	34.7
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	iahted U		0.300

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

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,128	61
				Sum of Area and UA	1,128	61

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

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



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

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

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design Conditioned Volume	764 ft2 6,494 ft3
Leave blank to use default of 8.5 ft. ceiling height HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	108
Envelope Heat Load Sum of UA X ΔT	5,485 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	3,577 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,062 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	9,062 Btu / Hour
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	11,327 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

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

Messages / Results * UA Reduction = 2.12, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 795 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline		P	roposed Desig	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	116	34.7	0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	795	21.5	0.027	795	21.5	
Wall (above grade) U =	0.056	1,060	59.4	0.054	1,060	57.3	
Floors over Crawlspace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
	Baseli	ne UA Total	127.5	Prop	osed UA Total	125.4	
	Requ	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 and 40
		<u> </u>		UA Perc	ent Reduction	4 =0/	
					UA Reduction	2.1	

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

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 795 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Services

Special Spe

Plan	Component		Door		Wid	ith	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								0	0.0
Α	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
В	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

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

Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	pt		-						-	-
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
						Sum	of Area	and UA	115.5	34.7
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	ighted U		0.300

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		795	21.5
				Sum of Area and UA	795	21.5

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,060	57
				Sum of Area and UA	1,060	57

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

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



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

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

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,758 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	125
Envelope Heat Load Sum of UA X ΔT	6,394 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	3,722 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,116 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,116 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	12,645 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information						
	East Town Crossing, Unit 302					
	Building G					
	Pioneer & Shaw, Puyallup					
Contact Info	ormation					
	Synthesis 9, LLC					
	Brett Lindsay					
	blindsay@synthesis9.com					
	253-468-4117					

Messages / Results * UA Reduction = 1.98, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 765 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

RESULTS - Comparison of Baseline and Proposed Design								
Component Performance, R occupancies		Baseline			Pro	posed Desig	jn	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	116	34.7		0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	765	20.7		0.027	765	20.7	
Wall (above grade) U =	0.056	989	55.4		0.054	989	53.4	
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	ine UA Total	122.7		Propos	sed UA Total	120.7	
	Requ	ired Credits	4.5		Propo	sed Credits	6.5	rom Tables 406.2 and 406.3
		_			UA Percen	nt Reduction	4 00/	
					U	A Reduction	2.0	
If the December of the Arthur Tarantal Manager of the Arthur T			0					
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	of are ≥ thos	se required in	Section R40	6, then the home meets	s 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	5.5	6.5

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 765 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Services

Special Spe

Plan	Component		Door		Wid	ith	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ot								0	0.0
Α	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
В	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

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

Vertica	l Glazing Schedule							Ro	ws to Show	3
Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	ıt								-	i
1	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
						Sum	of Area	and UA	115.5	34.7
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical G	lazing and	Doors A	rea Wei	iahted U		0.300

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		765	20.7
				Sum of Area and UA	765	20.7

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		989	53
	989	53				

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

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



Below Gra	ade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sur	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	d Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	on 403
Whole House Mechanical Ventilation Airflow Rate	55	5 CFM

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	765 ft2 6,503 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window Envelope Heat Load	6,157 Btu / Hour
Sum of UA X ∆T	
Air Leakage Heat Load ((Volume X 0.6) X \(\Data \text{T} \) \(\text{X} \) .018))	3,582 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	9,739 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	9,739 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	12,173 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

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

Messages / Results * Cry of Populary Description & Populary UA Reduction = 1.91, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 45 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 628 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline			Proposed 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	48	14.4	0.300	48	14.4	
Flat/Vaulted Ceilings U =	0.027	628	17.0	0.027	628	17.0	
Wall (above grade) U =	0.056	957	53.6	0.054	957	51.7	
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	96.9	Pro	posed UA Total	95.0	
	Requ	ired Credits	4.5	Pro	posed Credits	6.5	from Tables 406.2 and 406
		_		UA Per	cent Reduction	0.00/	
					UA Reduction	1.9	

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 628 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Prysible Development & Princing Services

Special Speci

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

Overhea	d Glazing										
Plan	Component		Glazing		Wic	ith	Не	ight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Area	and UA	0	0	0
				C	Overhead (Glazing A	rea We	ighted U			

Vertical Glazing Schedule Rows to Show 2											
	Plan	Component		Glazing		Wic	ith	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
L	Exempt			-						-	-
1 3		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
6	i	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	0	6	0	24.0	7.20
							Sum	of Area	a and UA	48.0	14.4
						Vertical C	Glazing A	rea We	ighted U		0.300
Vertical Glazing and Doors Area Weighted U 0.300											

Plan	Component		Attic		
ID	Description	Ref.	U	Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027	628	17.0

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		957	52
		•		Sum of Area and UA	957	52

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

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



Below	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								0			

Ventilation Requirements			
Number of Bedrooms	1		
Run-Time Percent in Each 4-Hour Segment	100%		
Is the system Balanced?	Balanced		Verify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed		Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	403	
Whole House Mechanical Ventilation Airflow Rate	45	CFM	
		-	

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	628_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	5,338 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	95
Envelope Heat Load Sum of UA Χ ΔΤ	4,846 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	2,940 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	7,786 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	7,786 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	9,733 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Info	rmation
	East Town Crossing, Unit 304
	Building G
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com

Messages / Results * UA Reduction = 2.02, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 732 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

RESULTS - Comparison of Baseline and Proposed Design								
Component Performance, R occupancies		Baseline				oposed Desig	<i>*</i>	
	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	63	18.9		0.300	63	18.9	
Flat/Vaulted Ceilings U =	0.027	732	19.8		0.027	732	19.8	
Wall (above grade) U =	0.056	1,010	56.6		0.054	1,010	54.5	
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	ine UA Total	107.2		Propo	sed UA Total	105.2	
	Requ	ired Credits	4.5		Prop	osed Credits	6.5	from Tables 406.2 and 406.3
		_			UA Perce	nt Reduction	4.00/	
					ι	JA Reduction	2.0	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	06 are ≥ thos	se required in	Section R40	6, then the home m	neets the WSE	Э.		

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

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

THERMAL ENVELOPE DETAILS - Proposed Design	

Conditioned Floor Area, Proposed Design 732 sq. ft

Classification Small Dwelling Unit

Notes Classification Small Dwelling Unit

Talke Wats

Trailer

Trailer

Plan	Component		Door		Wid	ith	Height			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt	t								0	0.0
Α	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
В	Code Baseline, U=0.30	-	0.30	1	3	0	6	8	20	6.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
									0	0.0
						Sum	of Area	and UA	40	12.0
					Exterior	Doors A	rea We	ighted U		0.300

Plan	Component		Glazing		Wic	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 (Slazing A	rea We	ighted U		

١	ertical (Glazing Schedule							Ro	ws to Show	2
	Plan	Component		Glazing		Wic	ith	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
	Exempt			-						-	-
1 3		U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
2 5		U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	6	0	15.0	4.50
							Sum	of Area	a and UA	63.0	18.9
						Vertical (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	732	19.8

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,010	55
		•		Sum of Area and UA	1,010	55

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

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



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

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

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	732_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,222 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	105
Envelope Heat Load Sum of UA X AT	5,365 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	3,427 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	8,792 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	8,792 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	10,990 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Info	rmation		
	East Town Crossing, Unit 305		
	Building G		
	Pioneer & Shaw, Puyallup		
Contact Info	Building G Pioneer & Shaw, Puyallup ontact Information Synthesis 9, LLC		
	Synthesis 9, LLC		
	Brett Lindsay		
	blindsay@synthesis9.com		

Messages / Results * UA Reduction = 1.91, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 45 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 628 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

Component Performance, R occupancies		Baseline			Pro	posed Desig	n	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	48	14.4		0.300	48	14.4	
Flat/Vaulted Ceilings U =	0.027	628	17.0		0.027	628	17.0	
Wall (above grade) U =	0.056	957	53.6		0.054	957	51.7	
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	ine UA Total	96.9		Propos	sed UA Total	95.0	
	Requ	ired Credits	4.5		Propo	sed Credits	6.5	from Tables 406.2 and 406.3
UA Percent Reduction							2.0%	
					U	A Reduction	1.9	

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 628 sq. ft	
Classification Small Dwelling Unit	City of Puyallup Development & Permitting Services ISSUED PERMIT
Notes	Building Planning Engineering Public Works
	Fire Traffic

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

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

١	/ertical (Glazing Schedule							Ro	ws to Show	2
	Plan	Component		Glazing		Wic	ith	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
L	Exempt			-						-	-
1 3		U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	4	0	24.0	7.20
6	i	U=0.30 (Code Baseline)	Table 406.2	0.30	1	4	0	6	0	24.0	7.20
							Sum	of Area	a and UA	48.0	14.4
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		628	17.0	
				Sum of Area and UA	628	17.0	

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		957	52
		•		Sum of Area and UA	957	52

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

Slab on G	Grade (less than 2 feet below grade)						
Plan ID	Component Description	Ref.	Slab 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	ngth and UA	0	0.0		0	0		

Ventilation Requirements			
Number of Bedrooms	1		
Run-Time Percent in Each 4-Hour Segment	100%		
Is the system Balanced?	Balanced	Ve	erify system meets definition of 'Balanced Whole-House Ventilation'
Is the system Distributed?	Distributed	Ve	erify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	403	
Whole House Mechanical Ventilation Airflow Rate	45	CFM	

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

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

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 Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	628 ft2 5,338 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window Envelope Heat Load	95 4,846 Btu / Hour
Sum of UA X Δ T	H ₁ 040 Dtu / Houl
Air Leakage Heat Load ((Volume X 0.6) X \(\Delta\)T) X .018))	2,940 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	7,786 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	7,786 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	9,733 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Info	rmation
	East Town Crossing, Unit 306
	Building G
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com

Messages / Results * UA Reduction = 2.02, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 732 sq. ft.
Baseline Description:	Code Baseline - Baseline and proposed window areas are equal.
About Your Selection:	Up to 15 sf exempt window and 24 sf exempt door allowable

RESULTS - Comparison of Baseline and Proposed Design								
Component Performance, R occupancies		Baseline			Pro	posed Desig	jn	
	U	Area	UA		U	Area	UA	
Doors U =	0.300	40	12.0		0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0			0	0.0	
Vertical Glazing U =	0.300	63	18.9		0.300	63	18.9	
Flat/Vaulted Ceilings U =	0.027	732	19.8		0.027	732	19.8	
Wall (above grade) U =	0.056	1,010	56.6		0.054	1,010	54.5	
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	ine UA Total	107.2		Propos	sed UA Total	105.2	
	Requ	ired Credits	4.5		Propo	sed Credits	6.5	from Tables 406.2 and 406.3
UA Percent Reduction								
					U	A Reduction	2.0	
							2.0	
If the Proposed UA ≤ the Target UA, and the Proposed Credits from Table 40	06 are ≥ thos	se required in	Section R40	6, then the home mee	ets 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	5.5	6.5

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design 732 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psystible Development & President Specification Small Dwelling Unit

Represent Specification Small Dwelling Unit

Notes

Total City of Psystible Development & President Specification Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystible Development & Psystian Specification Small Dwelling Unit

Total City of Psystian Specification Small Dwelling Unit

Tot

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

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

١	ertical (Glazing Schedule							Ro	ws to Show	2
	Plan	Component		Glazing		Wic	ith	He	eight		
	ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
	Exempt			-						-	-
1 3		U=0.30 (Code Baseline)	Table 406.2	0.30	2	6	0	4	0	48.0	14.40
2 5		U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	6	0	15.0	4.50
							Sum	of Area	a and UA	63.0	18.9
						Vertical (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		732	19.8	
				Sum of Area and UA	732	19.8	

Plan	bove Grade) Component		Wall				
ID	Description	Ref.	U		Net Area	UA	
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,010	55	
				Sum of Area and UA	1,010	55	

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

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



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

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

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

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design	732_ft2
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	6,222 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window	105
Envelope Heat Load Sum of UA X AT	5,365 Btu / Hour
Air Leakage Heat Load ((Volume X 0.6) Χ ΔΤ) Χ .018))	3,427 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	8,792 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	8,792 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	10,990 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Information East Town Crossing, Unit 307 Building G Pioneer & Shaw, Puyallup Contact Information Synthesis 9, LLC Brett Lindsay blindsay@synthesis9.com

253-468-4117

Messages / Results * UA Reduction = 2.12, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

ANALYSIS SET UP	
What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 795 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	Component Performance, R occupancies Baseline				Proposed Design				
	U	Area	UA	U	Area	UA			
Doors U =	0.300	40	12.0	0.300	40	12.0			
Overhead Glazing U =	0.500	0	0.0		0	0.0			
Vertical Glazing U =	0.300	116	34.7	0.300	116	34.7			
Flat/Vaulted Ceilings U =	0.027	795	21.5	0.027	795	21.5			
Wall (above grade) U =	0.056	1,060	59.4	0.054	1,060	57.3			
Floors over Crawlspace U =	0.029	0	0.0		0	0.0			
Slab on Grade F =	0.540	0	0.0		0	0.0			
Below Grade Wall U =	0.042	0	0.0		0	0.0			
Below Grade Slab F =	0.570	0	0.0		0	0.0			
		_							
	Baseli	ne UA Total	127.5	Prop	osed UA Total	125.4			
	Requ	ired Credits	4.5	Proj	osed Credits	6.5	from Tables 406.2 and 406.3		
		_		UA Perc	ent Reduction	1.7%			
					UA Reduction	2.1			

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

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

THERMAL ENVELOPE DETAILS - Proposed Design	

Conditioned Floor Area, Proposed Design 795 sq. ft

Classification Small Dwelling Unit

Notes

Sq. ft

City of Psysting Development & Particing Services

Special Conditions of City of Psysting Development & Particing Services

Notes

Fig. Trafic

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

Overhead Glazing											
Plan	Component		Glazing		Wid	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
						Sum	of Are	a and UA	0	0	
				C	Overhead (Glazing A	rea We	ighted U			
											_

Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exemp	pt		-						-	-
2	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
3	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
4	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
						Sum	of Area	and UA	115.5	34.7
					Vertical G	lazing A	rea Wei	ighted U		0.300
Vertical Glazing and Doors Area Weighted U 0.300										

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		795	21.5
				Sum of Area and UA	795	21.5

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		1,060	57
				Sum of Area and UA	1,060	57

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

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



	rade Walls and Slabs								
Plan	Component		Wall	Wall	Wall	Slab		Slab	
ID	Description	Ref.	U	Area	UA	F	Slab Perim	UA	
	Sum of Area, Length and			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	d Verify system meets definition of 'Distributed Whole-House Ventilation'
Ventilation Code Section	IMC, Section	on 403
Whole House Mechanical Ventilation Airflow Rate	55	5 CFM

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

Heating System Sizing - Proposed Design Try	Out BetterBuiltNW's HVAC Sizing Tool: https://betterbuiltnw.com/resources/hvac-sizing-tool
Nearest Weather Station	Puyallup
Indoor Design Temperature	70 F
Outdoor Design Temperature	19 F
Design Temperature Difference (ΔT)	51 F
Conditioned Floor Area, Proposed Design Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	795 ft2 6,758 ft3
HVAC System Type	Heat Pump
Location of HVAC Distribution System	Unducted
Sum of UA, including exempt door and window Envelope Heat Load	6,394 Btu / Hour
Sum of UA X ΔT	
Air Leakage Heat Load ((Volume X 0.6) X \(\Data \text{T} \) \(\text{X} \) .018))	3,722 Btu / Hour
Building Design Heat Load Air Leakage + Envelope Heat Loss	10,116 Btu / Hour
Building and Duct Heat Load For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	10,116 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	12,645 Btu / Hour
Building and Duct Heat Loss X 1.40 for all other systems	

Project Info	rmation
	East Town Crossing, Unit 308
	Building G
	Pioneer & Shaw, Puyallup
Contact Info	ormation
	Synthesis 9, LLC
	Brett Lindsay
	blindsay@synthesis9.com
	253-468-4117

Messages / Results * UA Reduction = 1.98, Proposed UA is better than baseline by 2% Whole House Mechanical Ventilation Airflow Rate: 55 CFM with Run Time Percent of 100%, Balanced, Distributed

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

What code compliance pathway are you using?	Prescriptive Path Compliance with Option 1 (preferred)
Project Building Type?	New Construction
Occupancy Type?	R2 Multifamily
Code Version?	WSEC 2018
Classification:	Small Dwelling Unit 764 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	ın		
_	U	Area	UA	U	Area	UA	
Doors U =	0.300	40	12.0	0.300	40	12.0	
Overhead Glazing U =	0.500	0	0.0		0	0.0	
Vertical Glazing U =	0.300	116	34.7	0.300	116	34.7	
Flat/Vaulted Ceilings U =	0.027	764	20.6	0.027	764	20.6	
Wall (above grade) U =	0.056	989	55.4	0.054	989	53.4	
Floors over Crawispace U =	0.029	0	0.0		0	0.0	
Slab on Grade F =	0.540	0	0.0		0	0.0	
Below Grade Wall U =	0.042	0	0.0		0	0.0	
Below Grade Slab F =	0.570	0	0.0		0	0.0	
		_					
	Baseli	ne UA Total	122.7	Propo	sed UA Total	120.7	
	Requi	ired Credits	4.5	Prop	osed Credits	6.5	from Tables 406.2 and 406.3
		_		UA Perce	nt Reduction	4.00/	
				ı	JA Reduction	2.0	

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

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

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

THERMAL ENVELOPE DETAILS - Proposed Design		
THERWAL ENVELOPE DETAILS - Proposed Design		

Conditioned Floor Area, Proposed Design sq. ft		
Classification Small Dwelling Unit	City of I Development & P ISSUED	Permitting Services
Notes	Building Engineering	Planning Public Works
	Fire	Traffic

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

Overhead Glazing											
Plan	Component		Glazing		Wic	dth	He	eight			
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA	
									0		
									0		
									0		
									0		
									0		
	Sum of Area and UA								0	0	
				c	Overhead (Glazing A	rea We	ighted U			

Plan	Component		Glazing		Wid	th	He	ight		
ID	Description	Ref.	U	Qt.	Feet	Inch	Feet	Inch	Area	UA
Exempt									-	-
	U=0.30 (Code Baseline)	Table 406.2	0.30	1	2	6	3	0	7.5	2.25
	U=0.30 (Code Baseline)	Table 406.2	0.30	1	6	0	6	0	36.0	10.80
	U=0.30 (Code Baseline)	Table 406.2	0.30	3	6	0	4	0	72.0	21.60
						Sum	of Area	and UA	115.5	34.7
					Vertical G	lazing A	rea Wei	ighted U		0.300
				Vertical GI	lazing and	Doors A	rea Wei	iahted U		0.300

Plan	Component		Attic			
ID	Description	Ref.	U		Area	UA
	R49 blown Attic STD baffled (Code Baseline, Option 1.1-1.4)	10-7	0.027		764	20.6
				Sum of Area and UA	764	20.6

Plan	Component		Wall			
ID	Description	Ref.	U		Net Area	UA
	R21 cavity+R0 foam INT 2X6W Lap (Code Baseline)	10-5	0.054		989	53
				Sum of Area and UA	989	53

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

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



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

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

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

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

eating System Sizing - Proposed Design Try Out BetterBuiltNW's HVAC Sizing Tool: https://be	etterbuiltnw.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 764 ft2	
· · · · · · · · · · · · · · · · · · ·	
Conditioned Volume Leave blank to use default of 8.5 ft. ceiling height	
	1
HVAC System Type Heat Pump	_
Location of HVAC Distribution System Unducted	
Sum of UA, including exempt door and window 121	
Envelope Heat Load 6,156 Btu / Hour	
Air Leakage Heat Load 3,577 Btu / Hour ((Volume X 0.6) Χ ΔΤ) Χ. Δ18))	
Building Design Heat Load Air Leakage + Envelope Heat Loss	
Building and Duct Heat Load 9,733 Btu / Hour For ducts located in unconditioned space: Sum of Building Heat Loss X 1.1	
For ducts located in conditioned space or ductless: Sum of Building Heat Loss X 1	
Maximum Heat Equipment Output Building and Duct Heat Loss X 1.25 for heat pumps	
Building and Duct Heat Loss X 1.40 for all other systems	