

TO **Maziar Rahmati**  
EMAIL **MRahmati@panthergroup.ca**  
Panther Group  
1533 Broadway St. #112  
Port Coquitlam, BC V3C 6P3  
CC David Cheung, dcheung@gwa.ca  
CC Lisa Mackenzie, LisaM@MMoser.com

**R-23714.000**  
**K41 W41st Avenue | Building**  
**Enclosure and Energy**

DATE November 26, 2020

REGARDING **Rezoning Application Energy Modelling**

Dear Maziar Rahmati,

Please find attached supporting documentation summarizing the results of the modelling of K-41 – 2005-2037 West 41<sup>st</sup> Avenue, Vancouver, BC. K-41 is pursuing compliance with Path B of the City of Vancouver Green Buildings Policy for Rezoning (Rezoning Policy), as modified by the City of Vancouver Secured Rental Policy and the City of Vancouver Low Carbon Energy Systems Policy (LCES Policy).

The energy model inputs and assumptions were developed using the applicable requirements of the City of Vancouver Energy Modelling Guidelines v2.0, as referenced in the Rezoning Policy. Furthermore, ASHRAE Standard 90.1-2016 Appendix G was used to develop the performance targets for the daycare space, as referenced in Section 10.2 of the 2019 Vancouver Building Bylaw (VBBL). The energy modelling software eQUEST v3.65 was used for this analysis.

The design team is pursuing LCES Type 3: User-Owned On-site LCES under the LCES Policy. As such, compliance with Path B of the Rezoning Policy was evaluated based on the performance limits for buildings connected to a city-recognized low carbon energy system.

RDH created the energy model to reflect information provided by the design team through the following drawings, documents, and correspondence:

- Architectural drawings for coordination – Gustavson Wylie Architects (GWA) – October 10, 2020
- Mechanical email correspondence – Smith + Anderson (S+A) – October 21, 2020, October 27, 2020, November 6, 2020
- Electrical email correspondence – S+A – October 28, 2020
- Structural preliminary framing options – Fast + Epp (F+E) – October 26, 2020, revised November 17, 2020
- Design team meetings – October 15, 2020, November 2, 2020, November 19, 2020.

Where required information was not explicitly defined in the drawings, it was informed by correspondence with the designers of record.

Based on our analysis, the proposed design of K-41 meets the requirements of the Rezoning Policy as modified by the Secured Rental Policy and LCES Policy, as shown in

Attachment 1, based on the complete list of model assumptions summarized in Attachment 2.

LEED BD+C New Construction v4 energy performance was also evaluated based on an ASHRAE 90.1-2010 baseline and LEED guidelines. The project meets the Minimum Energy Performance prerequisite and may achieve up to 16 LEED points under the Optimize Energy Performance credit. However, given the early stage of this project, RDH recommends that the LEED consultant assume 14 LEED points under this credit at this time.

RDH Building Science Inc. was retained to model the performance of the above design drawings and specifications. RDH is not the designer of record for this building and is not responsible for the completion of the mandatory checklists. It is the responsibility of the designers of record and the contractor to review the construction and materially maintain the intended energy performance of the final as-constructed project.

We trust this report summarizes the rezoning application energy modelling. Please do not hesitate to contact us if you require any further information.

Regards,



**Ryan McNamara** | M.A.Sc., P.Eng.  
Building Science Engineer  
rmcnamara@rdh.com  
T 604-873-1181 x199  
**RDH Building Science Inc.**

Reviewed by  
**Brittany Coughlin** | M.A.Sc., P.Eng., BEMP,  
CPHC, LEED AP BD+C  
Principal, Energy + Sustainability Specialist  
bcoughlin@rdh.com  
T 604-873-1181 x129  
**RDH Building Science Inc.**

Encl.

- Attachment 1: 23714\_000 2020 11 26 K-41 Results.pdf
- Attachment 2: 23714\_000 2020 11 26 K-41 Energy Modeling Assumptions.pdf

**K-41 ENERGY MODELLING**  
REZONING APPLICATION

**Energy Modelling Results Summary**

Performance Metric	Requierment	Proposed Building	Requirement Met?
	Secured Rental <sup>1</sup> + CoV Rezoning <sup>2</sup> , Path B, LCES Pathway <sup>3</sup>		
Building Envelope Thermal Energy Demand TEDI (kWh/m <sup>2</sup> /yr)	25.2	22.5	YES
Equipment and Systems Total Energy Use Intensity TEUI (kWh/m <sup>2</sup> /yr)	125.2	106.3	YES
Equipment and Systems Greenhouse Gas Emission Intensity GHGI (kgCO <sub>2</sub> /m <sup>2</sup> /yr)	6.7	1.2	YES

<sup>1</sup> City of Vancouver - Secured Rental Policy, 2019-11-26

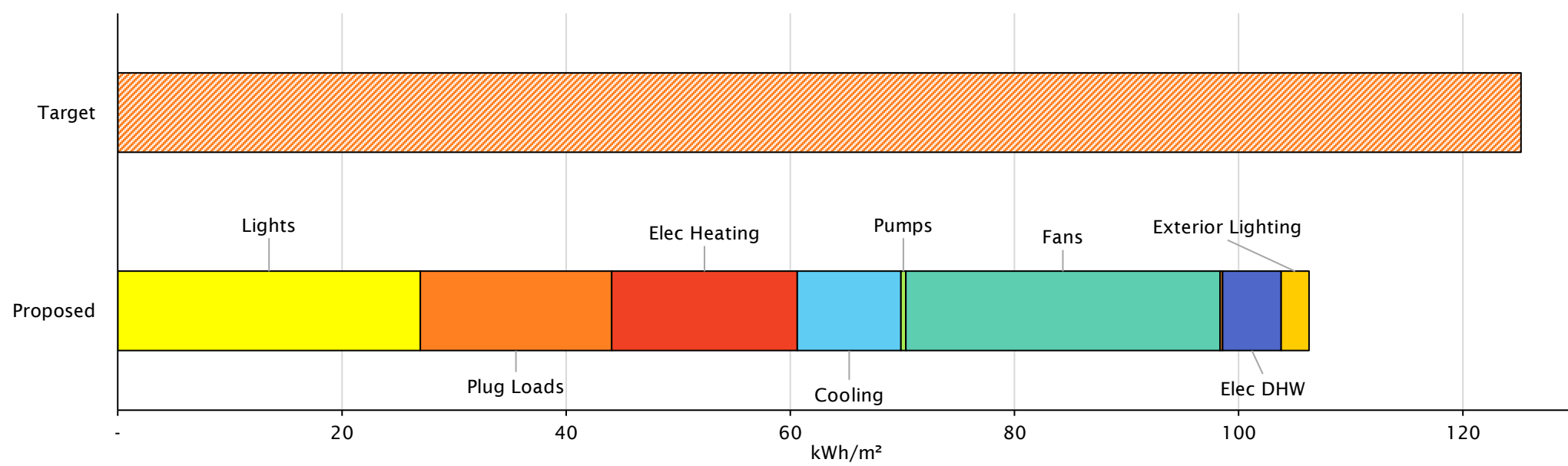
<sup>2</sup> City of Vancouver - Green Buildings Policy for Rezoning, 2018-05-02. Path B indicates the Low Emission Green Buildings pathway

<sup>3</sup> City of Vancouver - Low Carbon Energy Systems Policy, 2017-11-15

Note that LCES Type3: User-Owned On-site LCES requires that the modelled GHGI < (GHGI limit - 33%)

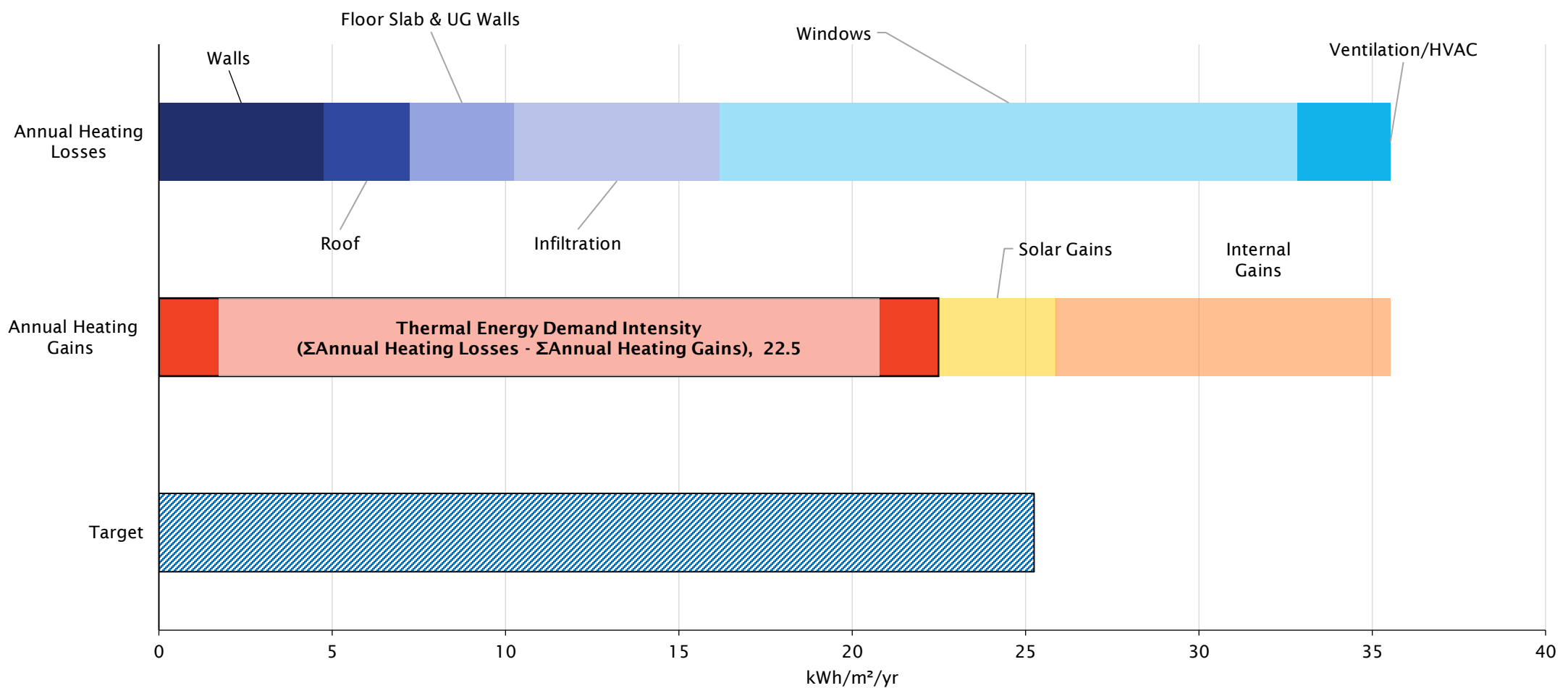
Note that suite-level submetering of space heating is assumed

**Total Energy Use Intensity TEUI (kWh/m<sup>2</sup>/yr)**



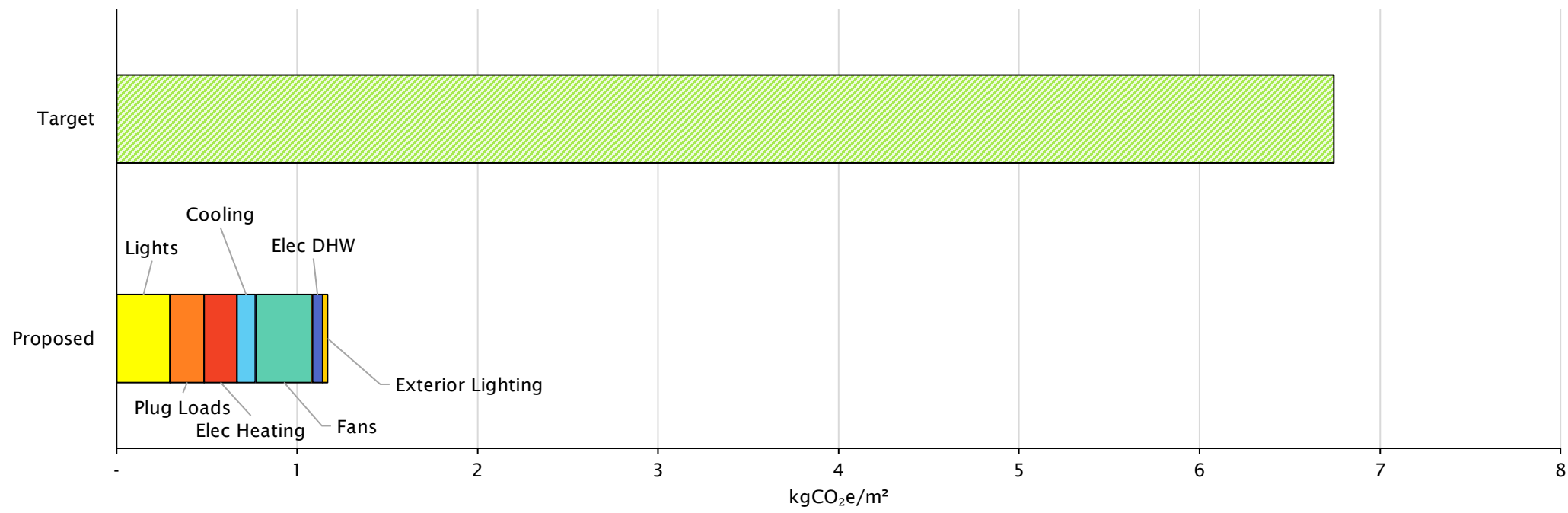
Note: The values presented above represent the relative proportion of each component of total energy use. As there is no pressurized corridor ventilation system, the TEUI Adjustment (CoV energy modelling guidelines v1.0 section 2.5.2) does not apply.

**Thermal Energy Demand Intensity TEDI (kWh/m<sup>2</sup>/yr)**



Note: The values presented above, represent the relative proportion of each component of the thermal energy demand intensity. These values include adjustments that account for internal gains from lights/plug loads/solar. As there is no pressurized corridor ventilation system, the TEUI Adjustment (CoV energy modelling guidelines v1.0 section 2.5.2) does not apply.

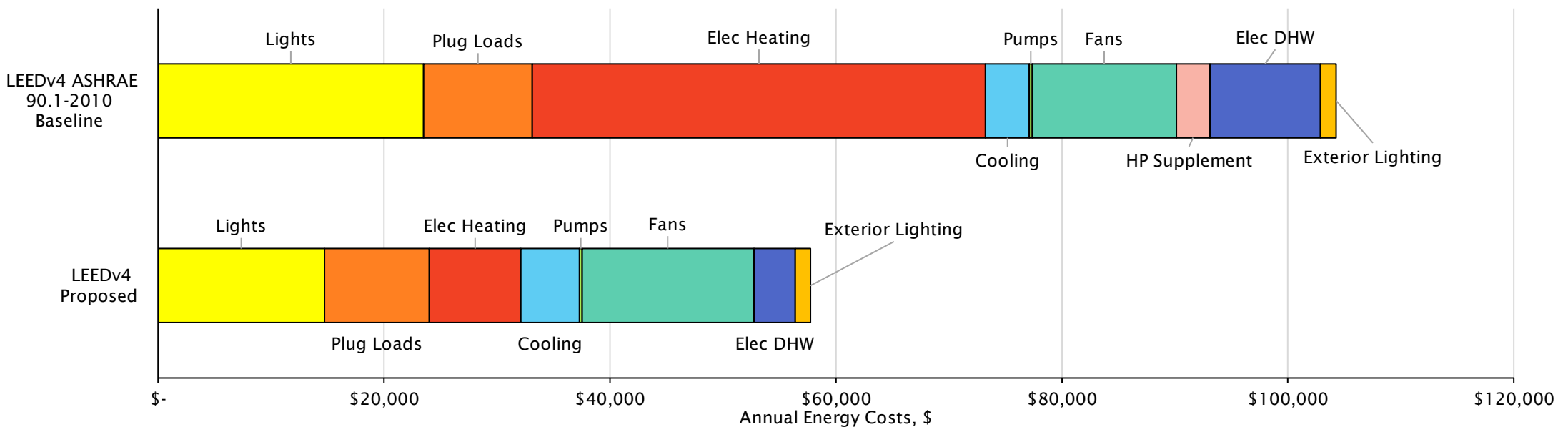
**Greenhouse Gas Emission Intensity GHGI (kgCO<sub>2</sub>e/m<sup>2</sup>/yr)**



Note: The values presented above represent the relative proportion of each component of total greenhouse gas emissions.

**LEED BD+C New Construction v4 Energy Performance**

Category	Prerequisite / Credit	Available Points	% Energy Cost Savings	Requirement Met/ Points
<u>Minimum Energy Performance:</u> 5% Energy Cost savings as compared to an ASHRAE 90.1-2010 Appendix G baseline building	Prerequisite	N/A	45%	YES
<u>Optimize Energy Performance:</u> % Energy Cost savings as compared to an ASHRAE 90.1-2010 Appendix G baseline building	Credit	18		16





**METHODOLOGY**

The following summary outlines the Proposed Design as presented in the Schematic Design drawings and narratives provided to RDH. Where these documents are not fully developed, assumptions have been made based on previous experience. This information will be used to assess the energy savings of the current design and to target additional efficiency measures if the required performance is not achieved. Therefore we ask the architectural, mechanical and electrical designers to review the complete document and provide comments where the model assumptions deviate from the proposed operation.

**GENERAL**

Project Name	K-41
Address	2005-2037 West 41st Ave, Vancouver
Location	Vancouver Region, BC - Vancouver (Granville & 41st Ave) - NECB CZ 4C (2,925 HDD below 18°C per NECB Table C-1)
Modelling Software	eQUEST 3.65
Weather File	Vancouver Int'l Airport (CWEC 2016 Update): 1108395

Drawing References	Architectural	2020 10 10 Design Drawings for Coordination
	Structural	2020 11 13 Revised Preliminary Framing Options

Referenced Codes, Standards, Guidelines	City of Vancouver - Secured Rental Policy, 2019-11-26 City of Vancouver - Green Buildings Policy For Rezoning (CoV Rezoning Policy), 2018-05-02 City of Vancouver - Building Bylaw (VBBL) 2019, City of Vancouver - Energy Modelling Guidelines v2.0, City of Vancouver - Low-Carbon Energy Systems Policy (LCES), 2017-11-15 ASHRAE Standard 90.1-2010, Energy Standard For Buildings Except Low-rise Residential Buildings ASHRAE Standard 90.1-2016, Energy Standard For Buildings Except Low-rise Residential Buildings National Energy Code for Buildings (NECB) 2015
---	---



**PERFORMANCE TARGETS**

Option 1: Secured Rental + CoV Rezoning, Path B, Non-LCES	TEUI (kWh/m <sup>2</sup> )	TEDI (kWh/m <sup>2</sup> )	GHGI (kgCO <sub>2</sub> /m <sup>2</sup> )	Reference/Description
Commercial Retail Units (CRUs)	170	21	3	CoV Rezoning Policy, Table B.1.2a, Retail
Daycare	143	28	21	CoV Rezoning Policy, Table B.1.2a, All other buildings - EUI 35% below 2019-VBBL Section 10.2, ASHRAE 90.1-2016 App G or NECB-2015 Part 8
Co-tutor Space (Office)	100	27	3	CoV Rezoning Policy, Table B.1.2a, Office
Residential	100	15	3	CoV Rezoning Policy, Table B.1.2a, Residential Low-Rise (<7 Storeys), modified by the CoV Secured Rental Policy, which requires zero-carbon heating and DHW systems and a GHGI of 3.0 kgCO <sub>2</sub> e/m <sup>2</sup>
Building Average	119	20	7	
Option 2: Secured Rental + CoV Rezoning, Path B, LCES	TEUI (kWh/m <sup>2</sup> )	TEDI (kWh/m <sup>2</sup> )	GHGI (kgCO <sub>2</sub> /m <sup>2</sup> )	Reference/Description
Commercial Retail Units (CRUs)	170	21	3	CoV Rezoning Policy, Table B.1.2b, Retail
Daycare	143	28	21	CoV Rezoning Policy, Table B.1.2a, All other buildings - EUI 35% below 2019-VBBL Section 10.2, ASHRAE 90.1-2016 App G or NECB-2015 Part 8
Co-tutor Space (Office)	110	27	3	CoV Rezoning Policy, Table B.1.2a, Office
Residential	110	25	3	CoV Rezoning Policy, Table B.1.2b, Residential Low-Rise (<7 Storeys), modified by the CoV Secured Rental Policy, which requires zero-carbon heating and DHW systems and a GHGI of 3.0 kgCO <sub>2</sub> e/m <sup>2</sup>
Building Average	125	25	7	Under the LCES policy, Type 3 User-Owned On-Site LCES, the project must surpass the GHGI target by 33%

**ARCHITECTURAL**

Space Types Description	Area (ft <sup>2</sup> )	Units	ASHRAE 90.1-2016 Space Type	Reference/Description
Commercial Retail Units (CRUs)	8,100	ft <sup>2</sup>	Sales Area	L1 CRUs and auxiliary spaces
Daycare	12,300	ft <sup>2</sup>	Classroom/Lecture Hall/Training Room - Preschool through 12th grade, laboratory, and shop classrooms	L1 Daycare lobby and L2 daycare space
Co-tutor (Office)	7,900	ft <sup>2</sup>	Office - Open Plan	L3 Office
Residential	30,400	ft <sup>2</sup>	N/A	L4-L6 Residential, L1 residential lobby, B1M (excluding voids open to below)
Parkade	30,000	ft <sup>2</sup>	Parking Area, Interior	B1, B2, and L1 NW stairwell and MEP space
Total	88,800	ft <sup>2</sup>		



Opaque Assemblies

Assembly	Proposed	Units	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016		LEED v4 Baseline - ASHRAE 90.1-2010	
Exterior Wall W1	R-25 Clear Field	(ft <sup>2</sup> -hr <sup>-1</sup> -F) / Btu	- Initial assumption from Building Enclosure team - Assuming "C3" framing option from F+E - Effective value includes building enclosure thermal bridges discussed below.	R-8.1	All values from Appendix G Table G3.4-4, based on Vancouver CZ 4C from Table Annex 1-2, as modified by Appendix G Table G3.1 Sec 5	R-15.6	All values from Table 5.5-5, based on Vancouver CZ 5C from Table B-2, as modified by Appendix G Table G3.1 Sec 5
	R-12 Effective			N/A		C-0.119	
Exterior Below Grade Wall BGW1	R-30 Effective	(ft <sup>2</sup> -hr <sup>-1</sup> -F) / Btu	R-15.9	R-20.8			
Roof R1	R-30 Effective	(ft <sup>2</sup> -hr <sup>-1</sup> -F) / Btu	R-19.2	R-13.5			
Exposed Floor F1	R-20 Clear Field	(ft <sup>2</sup> -hr <sup>-1</sup> -F) / Btu	- Initial assumption from Building Enclosure team - Ground floor over parking garage structure - Effective includes building enclosure thermal bridges (notably columns)				
	R-19 Effective						

Window to Wall Area

Orientation	Proposed	Daycare Reference for Performance Targets: ASHRAE 90.1-2016		LEED v4 Baseline - ASHRAE 90.1-2010	
North	57%	22%	All values from Table G3.1.1-1, as modified by Appendix G Table G3.1 Sec 5, for School (primary)	40%	Appendix G -Table G3.1 Section 5
South	74%	22%		40%	
East	79%	22%		40%	
West	0%	22%		40%	
Overall	55%	22%		40%	

Fenestration Performance

Fenestration	Proposed	Units	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016		LEED v4 Baseline - ASHRAE 90.1-2010	
Window Wall - Fixed	0.19	Utot (BTU/ft <sup>2</sup> -hr <sup>-1</sup> -F)	- Initial Assumption from Building Enclosure team; - High-performance triple glazing, low-conductivity framing, 2x low-e coatings and argon gas fill - Basis of design: Starline 9600 TGU, 2x low-e	N/A	All values from Appendix G Table G3.4-4, based on Vancouver CZ 4C from Table Annex 1-2, as modified by Appendix G Table G3.1 Sec 5	0.45	All values from Table 5.5-5, based on Vancouver CZ 5C from Table B-2, as modified by Appendix G Table G3.1 Sec 5
		0.2	SHGCtot			N/A	
Window Wall - Operable	0.25	Utot (BTU/ft <sup>2</sup> -hr <sup>-1</sup> -F)	- Initial Assumption from Building Enclosure team; - High-performance triple glazing, low-conductivity framing, 2x low-e coatings and argon gas fill - Basis of design: Starline 9600 TGU, 2x low-e	N/A		0.45	
		0.2	SHGCtot	N/A		0.2	
Curtain Wall - Stick Built	0.20	Utot (BTU/ft <sup>2</sup> -hr <sup>-1</sup> -F)	- Initial Assumption from Building Enclosure team; - High-performance triple glazing, low-conductivity framing, 2x low-e coatings and argon gas fill - Basis of design: Raico TGU, modified to account for exterior fins	0.57		0.45	
		0.2	SHGCtot	0.2		0.2	
Glazed Doors - Sliding	0.33	Utot (BTU/ft <sup>2</sup> -hr <sup>-1</sup> -F)	- Initial Assumption from Building Enclosure team; - Triple glazed sliding doors with low-conductivity framing, low-e coatings	0.57		0.45	
		0.2	SHGCtot	0.2		0.2	
Glazed Doors - Swing (Ground Floor Entry)	0.35	Utot (BTU/ft <sup>2</sup> -hr <sup>-1</sup> -F)	- Initial Assumption from Building Enclosure team;	N/A		0.45	
		0.2	SHGCtot	N/A		0.2	
Opaque Doors	0.37	Utot (BTU/ft <sup>2</sup> -hr <sup>-1</sup> -F)	- Initial Assumption; - ASHRAE 90.1-2016 Table 5.5-4 <i>Opaque Doors, Swinging</i>	N/A	0.7		

Thermal Bridges

Building Enclosure	Proposed	Units	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016		LEED v4 Baseline - ASHRAE 90.1-2010	
External/inverted corners	0.02	Btu / (ft-hr <sup>-1</sup> -F)	BC Hydro Thermal Bridging Guide v1.4 - Detail 8.5.1, R-10 exterior insulation	N/A	Assembly U-values stated in Table G3.4-4 are assumed to be effective (inclusive of thermal bridging)	N/A	Assembly U-values stated in Table 5.5-5 are assumed to be effective (inclusive of thermal bridging)
Roof parapet	0.03	Btu / (ft-hr <sup>-1</sup> -F)	BC Hydro Thermal Bridging Guide v1.4 - Detail 8.4.5, R-15 exterior wall insulation, R-40 roof insulation	N/A		N/A	
Columns	1.40	Btu / (hr <sup>-1</sup> -F)	BC Hydro Thermal Bridging Guide v1.3 - B.0.38 - 7.7.2	N/A		N/A	
Sheer walls	0.32	(ft-hr <sup>-1</sup> -F) / Btu	BC Hydro Thermal Bridging Guide v1.4 - Detail 7.7.1	N/A		N/A	
Intermediate floors	0.04	Btu / (ft-hr <sup>-1</sup> -F)	BC Hydro Thermal Bridging Guide v1.4 - Detail 8.2.2, R-10 exterior insulation	N/A		N/A	
Balconies	0.13	Btu / (ft-hr <sup>-1</sup> -F)	- Initial assumption - Assuming R-4 structural thermal break, based on F+E "C3" framing option	N/A		N/A	
Above grade/below grade transition	0.32	Btu / (ft-hr <sup>-1</sup> -F)	BC Hydro Thermal Bridging Guide v1.4 - Detail 7.7.1	N/A		N/A	

Fenestration	Proposed	Units	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016		LEED v4 Baseline - ASHRAE 90.1-2010	
Window install - punched	0.10	(ft-hr <sup>-1</sup> -F) / Btu	BC Hydro Thermal Bridging Guide v1.4 - Detail 9.1.11	N/A	See above	N/A	See above
Window install - curtain wall	0.05	(ft-hr <sup>-1</sup> -F) / Btu	BC Hydro Thermal Bridging Guide v1.4 - Detail 2.5.1 / 9.1.16 /	N/A		N/A	

Overall Enclosure Thermal Performance

Total Enclosure Effective R-Value	R-9.7	(ft <sup>2</sup> -hr <sup>-1</sup> -F) / Btu	Overall Envelope Performance includes windows,walls, roofs				
-----------------------------------	-------	--	--	--	--	--	--

Airtightness	Proposed	Units	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016		LEED v4 Baseline - ASHRAE 90.1-2010	
Infiltration Rate (@ Operating Pa)	0.04	cfm/ft <sup>2</sup> above-ground wall area	-At operating conditions CoV Energy Modelling Guidelines, Sec 2.4	0.04	Match Proposed	0.04	Match Proposed





**MECHANICAL**

**HVAC Strategy**

	Proposed	Daycare Reference for Performance Targets: ASHRAE 90.1-2016	LEED v4 Baseline - ASHRAE 90.1-2010
General Description	<ul style="list-style-type: none"> <li>- Heating and cooling provided by centralized VRF heat pumps, with independent systems serving each area of the building: Residential, Co-tutor (Level 3), Daycare (Level 1/2), Commercail CRUs (combined or individual systems TBC), Parking P1 Mezzanine</li> <li>- Ventilation provided by centralized ERVs, with independant systems serving each area of the building: Residential, Co-tutor (Level 3), Daycare (Level 1/2). Commercial CRUs to have tenant specified individual HRV/ERV. Parking Mezzanine level has a ceiling suspended ERV.</li> <li>- Residentail DHW provided by central ASHP, located in parking garage or roof, with DWHR, electric resistance back-up.</li> <li>- Commercail DHW provided by tank-type ASHP water heaters (located within thermal envelope) with one unit for each of the following areas of the building: Co-tutor (Level 3), Daycare (Level 1/2), Commercial CRUs</li> </ul>	Appendix G, Table G3.1, as modified by Table G3.1.1-3, <i>Other nonresidential and 3 floors or fewer and &lt;25,000 ft2</i> , System 3 (Packaged Single Zone -AC)	<p><b>Residential:</b> Table G3.1.1A/B, Residential, Electric and Other, System 2 - PTHP. Direct expansion cooling, electric heat pump heating.</p> <p><b>Nonresidential:</b> Table G3.1.1A/B, Nonresidential and 4 or 5 Floors and &lt;25,000 ft2 or 5 Floors or Less and 25,000 ft2 to 150,000 ft, Electric and Other, System 6 - Packaged VAV with PFP Boxes and reheat. Direct expansion cooling, electric resistance heating.</p>

**Domestic Water Heating & Service Water Heating**

**RESIDENTIAL**

System	Proposed	Units	Reference/Description
DHW Heating Type	Cental ASHP, electric back-up	-	- From discussion with S+A, - ASHP evaporator coil to be located in P2 mechanical space or roof, depending on space availability
Fuel Type	Electricity	-	
Threshold for Backup Operation	120	°F (°C)	-From discussion with S+A - Heat pump heating to 120 °F, then electric resistance heating from 120 °F to 140 °F
Coefficient of Performance (COP)	1.75 @ 15°F 2.0 @ 35°F 3.0 @ 75°F	-	- Initial assumption; - From discussion with S+A
Building Peak Load	1.3	GPM	- CoV EMG v2.0 Sec 2.2.1 - To include savings from low-flow fixtures and drain water heat recovery
Residential	0.025	GPM/ person	CoV EMG v2.0 Sec 2.2.1
DHW HW Supply Temp	140	°F (°C)	Water is heated to 140°F and delivered at 120°F.
DCW Inlet Temp	41	°F (°C)	CoV EMG v2.0 Sec 2.2.1
Low-flow fixtures	Yes	-	Modelled in accordance with LEED 2009
Drain Water Heat Recovery Flow Reduction	15%	%	CoV EMG v2.0 Sec 2.2.1, maximum allowance for drain water heat recovery savings
DHW Recirculating Pump	Proposed	Units	Reference/Description
Pump type	Constant speed	-	Initial assumption;
Brake Horse Power	19	W/GPM	ASHRAE 90.1-2016 allowance

LEED v4 Baseline - ASHRAE 90.1-2010	
Electric Resistance	Appendix G Table G3.1 - 11. Service Hot-Water Systems
Electricity	
N/A	Appendix G Table G3.1 - 11. Service Hot-Water Systems
1.0	
3.6	Modelled per LEED 2009 Low-Flow Fixtures calculator, Reference Case
N/A	
140	
Match Proposed	
No	
N/A	
LEED v4 Baseline - ASHRAE 90.1-2010	
Constant speed	
19	ASHRAE 90.1-2010 allowance

**COMMERCIAL**

System	Proposed	Units	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016	LEED v4 Baseline - ASHRAE 90.1-2010
SHW Heating Type	Tank-type ASHPs, electric back-up	-	- From discussion with S+A, - Each commercial space (CRUs, Daycare, Co-tutor space) will have its own dedicated SHW system, complete with storage tank - Tank-type ASHPs are located within the thermal envelope	Gas tank-type DHW heater	Electric Resistance Appendix G Table G3.1 - 11. Service Hot-Water Systems
Fuel Type	Electricity	-		Natural Gas	Electricity
Threshold for Backup Operation	120	°F (°C)	-From discussion with S+A - Heat pump heating to 120 °F, then electric resistance heating from 120 °F to 140 °F	N/A	N/A Appendix G Table G3.1 - 11. Service Hot-Water Systems
Coefficient of Performance (COP)	1.75 @ 15°F 2.0 @ 35°F 3.0 @ 75°F	-	- Initial assumption; - From discussion with S+A	80%	1.0 Table 7.8, as referenced by Appendix G, Table G3.1 Section 11
Building Peak Load	1.9	GPM	- CoV EMG v2.0 Sec 2.2.2, which references NECB-2011 (2015)	0.94	0.3 Modelled per LEED 2009 Low-Flow Fixtures calculator, Reference Case
Commercial Retail Units (CRU)	40	Watts/occupant	NECB 2015 - Table A-8.4.3.2.(2)-B - Sales Area	N/A	N/A
Daycare	65	Watts/occupant	NECB 2015 - Table A-8.4.3.2.(2)-B - Classroom/ Lecture hall/ Training room	N/A	N/A
Co-tutor (Office)	90	Watts/occupant	NECB 2015 - Table A-8.4.3.2.(2)-B - Office	N/A	N/A
Low-flow fixtures	None	-	Modelled in accordance with LEED 2009	No	No
DHW HW Supply Temp	140	°F (°C)	Water is heated to 140°F and delivered at 120°F.	140	140
DCW Inlet Temp	41	°F (°C)	CoV EMG v2.0 Sec 2.2.1	Match Proposed	Match Proposed
DHW Recirculating Pump	Proposed	Units	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016	LEED v4 Baseline - ASHRAE 90.1-2010
Pump type	Constant speed	-	Initial assumption;	Constant speed	Constant speed
Brake Horse Power	19	W/GPM	ASHRAE 90.1-2016 allowance	19	19 ASHRAE 90.1-2010 allowance

**RESIDENTIAL SUITES AND CORRIDORS**

Ventilation System: Central ERV, roof-mounted			
Element	Proposed	Units	Reference/Description
System	ERV serving residential suites and corridors. Ventilation ducted into the return of the VRF fan coil unit in each suite.		
Design Air Flow	Corridors: 30 cfm/door Suites: 15 cfm/person System: 2,300 cfm	-	-Airflow rates per ASHRAE 62-2001, as referenced by CoV EMG v2.0 - # Occupants = # Bedrooms + 1 = 63 total residential occupants
Outdoor air fraction	100	%	
Outdoor air volume control	Constant		- Initial assumption; - From discussion with S+A
System Supply Fan Power	0.66	W/cfm	ASHRAE 90.1-2016 G3.1.2.9, <i>constant speed</i> , modified by Table 6.5.3.1-1, -2, <i>0.5" Fully ducted exhaust, 0.9" MERV 13-15, 80% enthalpy recovery, 90% motor efficiency</i>
System Return Fan Power	0.66	W/cfm	
Fan Control	Constant		Ducted into the return of the FCU.
Economizer	None		
Heating	N/A		
Cooling	N/A		
Supply Air Temperature (heating)	N/A	°F (°C)	
Supply Air Temperature (cooling)	N/A	°F (°C)	
Humidity Control	None		
Sensible Heat Recovery Efficiency (SRE)	90% at 32°F	%	- From discussion with S+A

Zone Heating/Cooling Devices: Distributed Variable Refrigerant Flow (VRF) terminals			
Element	Proposed	Units	Reference/Description
Sizing Factor	1.6 Airflow 1.3 Heating 1.1 Cooling	-	- Initial assumption to account for standard sizes of VRF terminal units
Fan Power	0.2 - 0.3	W/cfm	Initial assumption;
Operation	Multi-speed fan, fan drops to low flow/ultra low flow when set point is met to circulate ventilation air		Initial assumption;
Cooling COP	3.0	COP	Initial assumption;
Heating COP	1.75 @ 15°F 2.0 @ 35°F 3.0 @ 75°F	-	- Initial assumption; - From discussion with S+A
Cooling Supply Temp	55	°F (°C)	- Initial assumption;
Heating Supply Temp	92	°F (°C)	- ASHRAE 90.1-2016 App G3.2.1.8.1; room temp +/- 20F

LEED v4 Baseline - ASHRAE 90.1-2010	
PTHP	Appendix G, Table G3.1, as modified by Table G3.1.1A/B,
OA to Match Proposed	Appendix G 3.1.2.2, Sizing factor to be 1.15 for airflow, cooling, 1.25 for heating
10%	
Constant speed	
0.30	Appendix G Section G3.1.2.10
0.30	
Constant	
None	Appendix G Section G3.1.2.7
COP-3.9 above 40F COP-1.0 below 40F	-Table 6.8.1D, PTHP (heating mode) standard size Appendix G Section G3.1.3.1, all heat pumps to have electric resistance auxiliary heat when OA temperature is below 40F -Note that per G3.1.2.1, fan power is to be modelled explicitly, and rated fan efficiencies include fan power. Efficiency therefore corrected to remove fan energy per ASHRAE 90.1-2013 Section G3.1.2.1
COP-4.7	-Table 6.8.1D, PTHP (cooling mode) standard size, - Note that per G3.1.2.1, fan power is to be modelled explicitly, and rated fan efficiencies include fan power. Efficiency therefore corrected to remove fan energy per ASHRAE 90.1-2013 Section G3.1.2.1
92	Appendix G Section G3.1.2.9.1, supply air temperature difference of 20F
55	
N/A	
N/A	

LEED v4 Baseline - ASHRAE 90.1-2010	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	



Ventilation System: Individual ERV per CRU			
Element	Proposed	Units	Reference/Description
System	Individual ERV serving each CRU. Ventilation ducted into the return of the VRF fan coil unit in each CRU		
Design Air Flow	350	cfm/ system	Airflow rates per ASHRAE 62.1-2001, as referenced by CoV EMG v2.0
Outdoor air fraction	100	%	
Outdoor air volume control	Constant speed		- Initial assumption; - ERV to be tenant supplied, may have minimal controls
System Supply Fan Power	0.57	W/cfm	ASHRAE 90.1-2016 G3.1.2.9, <i>constant speed</i> , modified by Table 6.5.3.1-1, -2, <i>0.5" Fully ducted exhaust, 0.9" MERV 9-12, 60% enthalpy recovery, 90% motor efficiency</i>
System Return Fan Power	0.57	W/cfm	
Fan Control	Constant		Ducted into the return of the FCU.
Economizer	None		
Heating	N/A		
Cooling	N/A		
Supply Air Temperature (heating)	N/A	°F (°C)	
Supply Air Temperature (cooling)	N/A	°F (°C)	
Humidity Control	None		
Sensible Heat Recovery Efficiency (SRE)	65% at 32°F	%	From discussion with S+A

Zone Heating/Cooling Devices: Distributed Variable Refrigerant Flow (VRF) terminals			
Element	Proposed	Units	Reference/Description
System Capacity	1.6 Airflow 1.3 Heating 1.1 Cooling	-	- Initial assumption to account for standard sizes of VRF terminal units
Fan Power	0.2 - 0.3	W/cfm	Initial assumption;
Operation	multi-speed fan, fan drops to low flow/ultra low flow when set point is met to circulate ventilation air		Initial assumption;
Cooling COP	3.0	COP	Initial assumption;
Heating COP	1.75 @ 15°F 2.0 @ 35°F 3.0 @ 75°F	-	- Initial assumption; - From discussion with S+A
Cooling Supply Temp	55	°F (°C)	- Initial assumption;
Heating Supply Temp	92	°F (°C)	- ASHRAE 90.1-2016 App G3.2.1.8.1; room temp +/- 20F

LEED v4 Baseline - ASHRAE 90.1-2010	
Packaged VAV with PFP Boxes and Reheat	Appendix G, Table G3.1, as modified by Table G3.1.1A/B,
OA Same as proposed Min flow of 0.3 at PFP Boxes	Appendix G 3.1.2.2, Sizing factor to be 1.15 for airflow, cooling, 1.25 for heating
17%	
Constant	
0.64	Appendix G Section G3.1.2.10, Table 6.5.3.1.1A/B, Assuming Fully ducted return and MERV 9/12 Filter, 90% efficient fan motor
0.64	
Variable	
Economizer required, high-temp shutoff 75F Electric Resistance, COP-1.0	Appendix G Section G3.1.2.7
EER-10 (COP 2.9)	Table 6.8.1A, Air conditioners, air cooled, capacity between 240,000 and 760,000 btu/h, single package, elec resistance heating
92	Appendix G Section G3.1.2.9.1, supply air temperature difference of 20F
55	
N/A	
N/A	

LEED v4 Baseline - ASHRAE 90.1-2010	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	



Ventilation System: Central ERV, roof-mounted							
Element	Proposed	Units	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016		LEED v4 Baseline - ASHRAE 90.1-2010	
System	ERV serving daycare spaces on floors 1-2. Ventilation ducted into the return of the VRF fan coil units			PSZ-AC	Appendix G, Table G3.1, as modified by Table G3.1.1-3,	Packaged VAV with PFP Boxes and Reheat	Appendix G, Table G3.1, as modified by Table G3.1.1A/B,
Design Air Flow	2,800	cfm	- Airflow rates per ASHRAE 62.1-2001, as referenced by CoV EMG v2.0 - Assuming "Classroom" space type, with 70% diversity factor, for a total occupancy of 146 people	11,100		OA Same as proposed Min flow of 0.3 at PFP Boxes	Appendix G 3.1.2.2, Sizing factor to be 1.15 for airflow, cooling, 1.25 for heating
Outdoor air fraction	100	%		0.32		33%	
Outdoor air volume control	Constant speed			Constant speed		Constant	
System Supply Fan Power	0.66	W/cfm	ASHRAE 90.1-2016 G3.1.2.9, <i>constant speed</i> , modified by Table 6.5.3.1-1, -2, 0.5" Fully ducted exhaust, 0.9" MERV 13-15, 80% enthalpy recovery, 90% motor efficiency	0.49	ASHRAE 90.1-2016 G3.1.2.9, <i>constant speed</i> , modified by Table 6.5.3.1-1, -2, 0.5" Fully ducted exhaust, 0.5" MERV 9-12, 80%, 90% motor efficiency	0.64	Appendix G Section G3.1.2.10, Table 6.5.3.1.1A/B, Assuming Fully ducted return and MERV 9/12 Filter, 90% efficient fan motor
System Return Fan Power	0.66	W/cfm		0.49		0.64	
Fan Control	Constant		Ducted into the return of the FCU.	Constant		Variable	
Economizer	None			Airside	Included per Table G.3.1.2.6 based on Climate Zone 4C	Economizer required, high-temp shutoff 75F	Appendix G Section G3.1.2.7
Heating	N/A			$\eta = 80\%$	- Table G3.1.1-4 Fossil Fuel Furnace, modified by Table G3.5.5, <i>warm-air furnace, gas fired</i> - Autosized, 1.25 sizing factor from Appendix G3.1.2.2	Electric Resistance, COP-1.0	
Cooling	N/A			EER = 9.3 COPc = 2.73	- Table G3.1.1-4 direct expansion, modified by Table G3.5.1, <i>air conditioners, air-cooled, &gt;240 MBH and &lt;760 MBH</i> - Autosized, 1.15 sizing factor from Appendix G3.1.2.3	EER-11 (COP 3.2)	Table 6.8.1A, Air conditioners, air cooled, capacity between 135,000 and 240,000 btu/h, single package, elec resistance heating
Supply Air Temperature (heating)	N/A	°F (°C)		92	ASHRAE 90.1-2016 App G3.2.1.8.1; room temp +/- 20	92	Appendix G Section G3.1.2.9.1, supply air temperature difference of 20F
Supply Air Temperature (cooling)	N/A	°F (°C)		55		55	
Humidity Control	None			None		N/A	
Sensible Heat Recovery Efficiency (SRE)	90% at 32°F	%	From discussion with S+A	N/A	Not required per G3.2.1.10 assuming system airflow <5,000 cfm and/or OA fraction <70%	N/A	

Zone Heating/Cooling Devices: Distributed Variable Refrigerant Flow (VRF) terminals							
Element	Proposed	Units	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016		LEED v4 Baseline - ASHRAE 90.1-2010	
System Capacity	1.6 Airflow 1.3 Heating 1.1 Cooling	-	- Initial assumption to account for standard sizes of VRF terminal units	N/A		N/A	
Fan Power	0.2 - 0.3	W/cfm	Initial assumption;	N/A		N/A	
Operation	Multi-speed fan, fan drops to low flow/ultra low flow when set point is met to circulate ventilation air		Initial assumption;	N/A		N/A	
Cooling COP	3.0	COP	Initial assumption;	N/A		N/A	
Heating COP	1.75 @ 15°F 2.0 @ 35°F 3.0 @ 75°F	-	- Initial assumption; - From discussion with S+A	N/A		N/A	
Cooling Supply Temp	55	°F (°C)	- Initial assumption;	N/A		N/A	
Heating Supply Temp	92	°F (°C)	- ASHRAE 90.1-2016 App G3.2.1.8.1; room temp +/- 20F	N/A		N/A	

Ventilation System: Central ERV, roof-mounted			
Element	Proposed	Units	Reference/Description
System	ERV serving co-tutor space on floor 3. Ventilation ducted into the return of the VRF fan coil units		
Design Air Flow	1,000	cfm	Airflow rates per ASHRAE 62-2001, as referenced by CoV EMC v2.0
Outdoor air fraction	100	%	
Outdoor air volume control	Constant speed		
System Supply Fan Power	0.66	W/cfm	ASHRAE 90.1-2016 G3.1.2.9, <i>constant speed</i> , modified by Table 6.5.3.1-1, -2, <i>0.5" Fully ducted exhaust, 0.9" MERV 13-15, 80% enthalpy recovery, 90% motor efficiency</i>
System Return Fan Power	0.66	W/cfm	
Fan Control	Constant		Ducted into the return of the FCU.
Economizer	None		
Heating	N/A		
Cooling	N/A		
Supply Air Temperature (heating)	N/A	°F (°C)	
Supply Air Temperature (cooling)	N/A	°F (°C)	
Humidity Control	None		
Sensible Heat Recovery Efficiency (SRE)	90% at 32°F	%	From discussion with S+A

Zone Heating/Cooling Devices: Distributed Variable Refrigerant Flow (VRF) terminals			
Element	Proposed	Units	Reference/Description
System Capacity	1.6 Airflow 1.3 Heating 1.1 Cooling	-	- Initial assumption to account for standard sizes of VRF terminal units
Fan Power	0.2 - 0.3	W/cfm	Initial assumption;
Operation	multi-speed fan, fan drops to low flow/ultra low flow when set point is met to circulate ventilation air		Initial assumption;
Cooling COP	3.0	COP	Initial assumption;
Heating COP	1.75 @ 15°F 2.0 @ 35°F 3.0 @ 75°F	-	- Initial assumption; - From discussion with S+A
Cooling Supply Temp	55	°F (°C)	- Initial assumption;
Heating Supply Temp	92	°F (°C)	- ASHRAE 90.1-2016 App G3.2.1.8.1; room temp +/- 20F

LEED v4 Baseline - ASHRAE 90.1-2010	
Packaged VAV with PFP Boxes and Reheat	Appendix G, Table G3.1, as modified by Table G3.1.1A/B,
OA Same as proposed Min flow of 0.3 at PFP Boxes	Appendix G 3.1.2.2, Sizing factor to be 1.15 for airflow, cooling, 1.25 for heating
21%	
Constant	
0.64	Appendix G Section G3.1.2.10, Table 6.5.3.1.1A/B, Assuming Fully ducted return and MERV 9/12 Filter, 90% efficient fan motor
0.64	
Variable	
Economizer required, high-temp shutoff 75F Electric Resistance, COP-1.0	Appendix G Section G3.1.2.7
EER-11.2 (COP 3.3)	Table 6.8.1A, Air conditioners, air cooled, capacity between 65,000 and 135,000 btu/h, single package, elec resistance heating
92	Appendix G Section G3.1.2.9.1, supply air temperature difference of 20F
55	
N/A	
N/A	

LEED v4 Baseline - ASHRAE 90.1-2010	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	

P1 MEZZANINE

Ventilation System: ERV, ceiling-suspended in space			
Element	Proposed	Units	Reference/Description
System	ERV serving co-tutor space on floor 3. Ventilation ducted into the return of the VRF fan coil units		
Design Air Flow	900	cfm	- Airflow rates per ASHRAE 62.1-2001, as referenced by CoV EMG v2.0 - "Conference Room" space type used for amenity space, with a diversity factor of 50%, for a total occupancy of 24 people
Outdoor air fraction	100	%	
Outdoor air volume control	Constant speed		
System Supply Fan Power	0.59	W/cfm	ASHRAE 90.1-2016 G3.1.2.9, <i>constant speed</i> , modified by Table 6.5.3.1-1, -2, <i>0.5" Fully ducted exhaust, 0.5" MERV 9-12, 80% enthalpy recovery, 90% motor efficiency</i>
System Return Fan Power	0.59	W/cfm	
Fan Control	Constant		Ducted into the return of the FCU.
Economizer	None		
Heating	N/A		
Cooling	N/A		
Supply Air Temperature (heating)	N/A	F (°C)	
Supply Air Temperature (cooling)	N/A	F (°C)	
Humidity Control	None		
Sensible Heat Recovery Efficiency (SRE)	80% at 32°F	%	From discussion with S+A

Zone Heating/Cooling Devices: Distributed Variable Refrigerant Flow (VRF) terminals			
Element	Proposed	Units	Reference/Description
System Capacity	1.6 Airflow 1.3 Heating 1.1 Cooling	-	- Initial assumption to account for standard sizes of VRF terminal units
Fan Power	0.2 - 0.3	W/cfm	Initial assumption;
Operation	Multi-speed fan, fan drops to low flow/ultra low flow when set point is met to circulate ventilation air		Initial assumption;
Cooling COP	3.0	COP	Initial assumption;
Heating COP	1.75 @ 15°F 2.0 @ 35°F 3.0 @ 75°F	-	- Initial assumption; - From discussion with S+A
Cooling Supply Temp	55	F (°C)	- Initial assumption;
Heating Supply Temp	92	F (°C)	- ASHRAE 90.1-2016 App G3.2.1.8.1; room temp + 20F

PARKING			
Ventilation System: parking garage exhaust fans			
Element	Proposed	Units	Reference/Description
System	Parking garage exhaust fans		
Design Air Flow	43,000	cfm	Airflow rate of 1.5 cfm/ft2 per ASHRAE 62-2001, as referenced by CoV EMG v2.0
Fan Power	0.5	W/cfm	ASHRAE 90.1-2016 allowance

LEED v4 Baseline - ASHRAE 90.1-2010	
Packaged VAV with PFP Boxes and Reheat	Appendix G, Table G3.1, as modified by Table G3.1.1A/B,
OA Same as proposed Min flow of 0.3 at PFP Boxes	Appendix G 3.1.2.2, Sizing factor to be 1.15 for airflow, cooling, 1.25 for heating
54%	
Constant	
0.64	Appendix G Section G3.1.2.10, Table 6.5.3.1.1A/B, Assuming Fully ducted return and MERV 9/12 Filter, 90% efficient fan motor
0.64	
Variable	
Economizer required, high-temp shutoff 75F Electric Resistance, COP-1.0	Appendix G Section G3.1.2.7
SEER-13 (COP 3.3)	Table 6.8.1A, Air conditioners, air cooled, capacity < 65,000 btu/h, single package
92	Appendix G Section G3.1.2.9.1, supply air temperature difference of 20F
55	
N/A	
N/A	

LEED v4 Baseline - ASHRAE 90.1-2010	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	
N/A	

LEED v4 Baseline - ASHRAE 90.1-2010	
Match Proposed	
Match Proposed	
0.5	ASHRAE 90.1-2010 allowance





**Lighting**

Main space type	Proposed	Controls	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016		LEED v4 Baseline - ASHRAE 90.1-2010	
Residential suites	0.46	W/ft <sup>2</sup>	- CoV EMG v2.0 allowance	N/A		Match Proposed	
Daycare	0.74	W/ft <sup>2</sup>	- ASHRAE 90.1-2016 Table 9.6.1 with additional 20% estimated savings associated with LED lighting, - Stairway lighting assumed to match corridor lighting - Parking garage lighting on 24/7 per CoV EMG v2.0, with occupancy sensors as modelled per NECB-2011 Sec 4.3.2.10	1.4	Table G3.7, as modified by Table G3.1, no OS required for shop classrooms, laboratory classrooms, and preschool through 12th-grade classrooms	1.24	Table 9.6.1 Space by space method
Co-tutor (Office)	0.65	W/ft <sup>2</sup>		N/A		0.98	
Commercial Retail Units (CRUs)	0.98	W/ft <sup>2</sup>		N/A		1.68	
Parkade	0.11	W/ft <sup>2</sup>		N/A		0.19	
Corridors	0.53	W/ft <sup>2</sup>		N/A		0.66	
Stairways	0.46	W/ft <sup>2</sup>		N/A		0.69	
Lobbies	0.55	W/ft <sup>2</sup>		N/A		0.9	
Storage	0.37	W/ft <sup>2</sup>		N/A		0.63	
Electrical/Mechanical	0.34	W/ft <sup>2</sup>		N/A		0.95	
Amenity/Multi-purpose	0.86	W/ft <sup>2</sup>		N/A		1.23	

**Process Loads**

Load	Proposed	Units	Reference/Description	Daycare Reference for Performance Targets: ASHRAE 90.1-2016		LEED v4 Baseline - ASHRAE 90.1-2010	
Residential suite plug loads	0.47	W/ft <sup>2</sup>	CoV EMG v2.0 allowance	N/A		Match Proposed	
Daycare plug loads	0.46	W/ft <sup>2</sup>	CoV EMG v2.0, which references NECB-2011 Table A8.4.3.3(1)B, Classroom/Lecture/Training	Match Proposed		Match Proposed	
Co-tutor (Office) plug loads	0.70	W/ft <sup>2</sup>	CoV EMG v2.0, which references NECB-2011 Table A8.4.3.3(1)B, Office, open plan	N/A		Match Proposed	
Commercial Retail Units (CRUs) plug loads	0.23	W/ft <sup>2</sup>	CoV EMG v2.0, which references NECB-2011 Table A8.4.3.3(1)B, Retail, sales area	N/A		Match Proposed	
Lobby plug loads	0.09	W/ft <sup>2</sup>	CoV EMG v2.0, which references NECB-2011 Table A8.4.3.3(1)B, Lobby	N/A		Match Proposed	
Storage plug loads	0.09	W/ft <sup>2</sup>	CoV EMG v2.0, which references NECB-2011 Table A8.4.3.3(1)B, Storage Area	N/A		Match Proposed	
Electrical/Mechanical plug loads	0.09	W/ft <sup>2</sup>	CoV EMG v2.0, which references NECB-2011 Table A8.4.3.3(1)B, Electrical/Mechanical	N/A		Match Proposed	
Amenity/Multi-purpose plug loads	0.09	W/ft <sup>2</sup>	CoV EMG v2.0, which references NECB-2011 Table A8.4.3.3(1)B, Conference Area/Meeting/Multi-purpose	N/A		Match Proposed	
Elevators	6.00	kW	CoV EMG v2.0 allowance for 2 elevators at 3 kW each	N/A		Match Proposed	
Suite Exhaust Fans	Kitchen 200 cfm 0.5 W/cfm Manual Switch Control	-	- Initial Assumption - Fans assumed to operate 2 Hours/day	N/A		Match Proposed	
Suite Laundry Exhaust	N/A	-	- Initial Assumption - In-suite condensing dryers	N/A		Match Proposed	
Exterior Lighting	400.0	W	ASHRAE 90.1 Table 9.4.2-2, Zone 2	N/A		Match Proposed	

**Utility Rates**

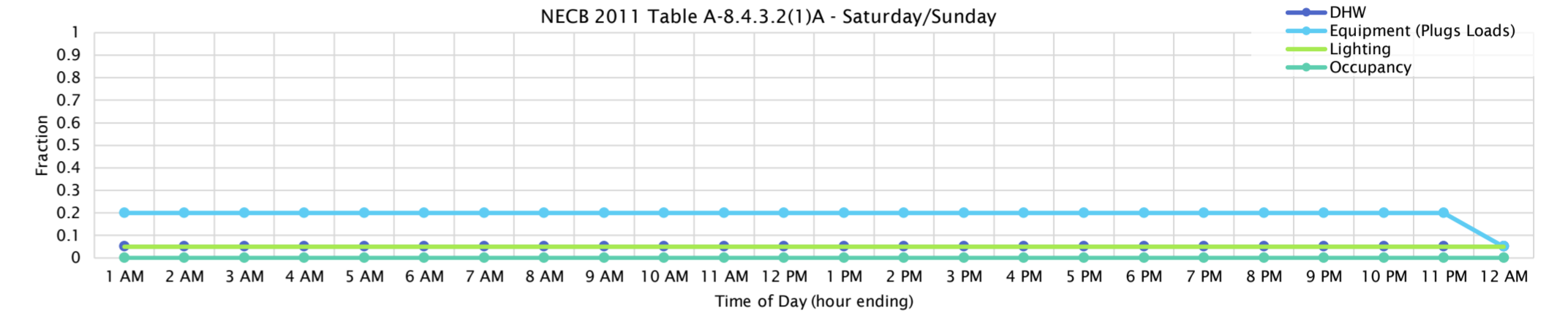
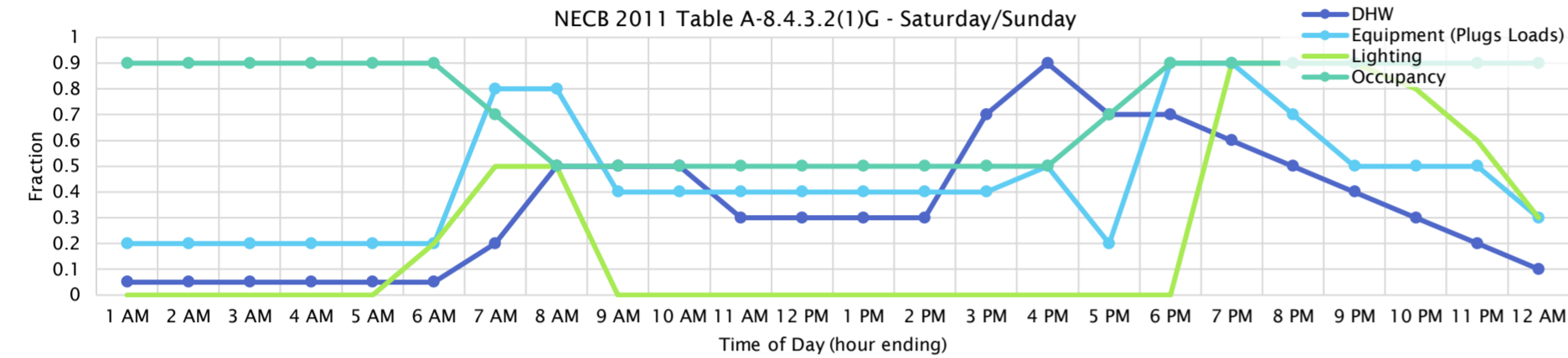
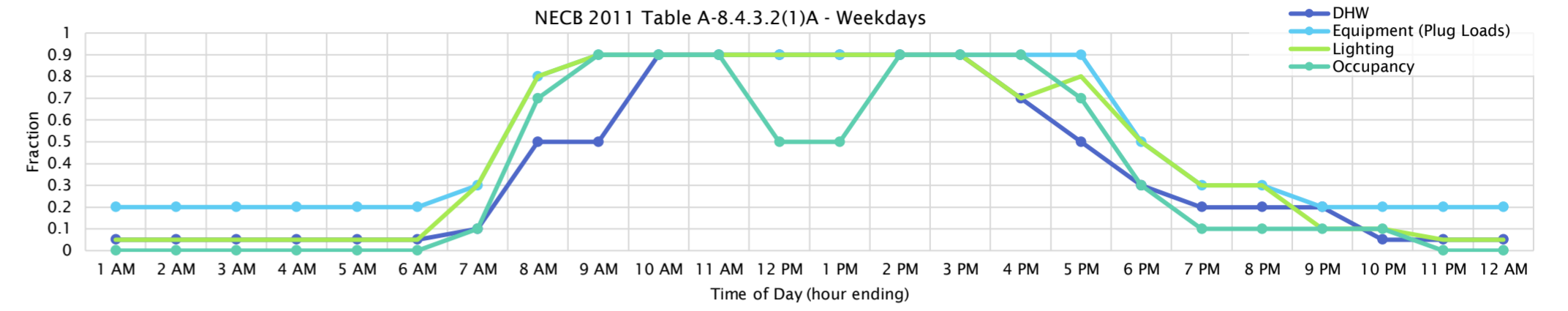
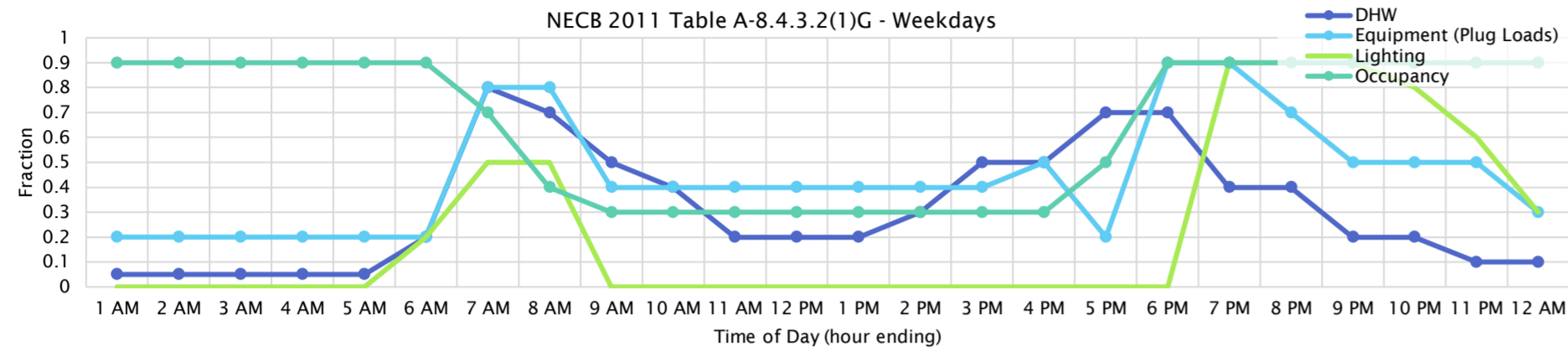
Category	Proposed	Units	Reference/Description
Electricity - Consumption	\$ 0.06	\$/kWh	- BC Hydro, Large General Service rates, assuming annual peak demand between greater than 150 kW, or total annual consumption of more than 550,000 kWh/year
Electricity - Demand	\$ 12.22	\$/kW	- Assuming residential rental suite energy consumption is metered to the building owner, and commercial rates apply - Assuming no discounts

**Space Conditions**

Main space type	Occupancy/ Operating Hours	Occupancy Density	Thermostat Set points	Reference/Description
Lobby / Corridor	2980 h/year	N/A	Heated to 72 °F	CoV EMG v2.0, which reference BC Hydro CNC Energy Modelling Guidelines (2019) for scheduling, ASHRAE 62.1-2001
Stairwells	2680 h/year	N/A	Heated to 72 °F	CoV EMG v2.0, which reference BC Hydro CNC Energy Modelling Guidelines (2019) for scheduling, ASHRAE 62.1-2001
Storage	1910 h/year	N/A	Heated to 72 °F	CoV EMG v2.0, which reference BC Hydro CNC Energy Modelling Guidelines (2019) for scheduling, ASHRAE 62.1-2001
Electrical/Mechanical	1000h/year	N/A	Heated to 72 °F	CoV EMG v2.0, which reference BC Hydro CNC Energy Modelling Guidelines (2019) for scheduling, ASHRAE 62.1-2001
Parking	24/7	N/A	Unconditioned	CoV EMG v2.0, ASHRAE 62.1-2001
Amenity/ Multi-Purpose	13/7	120 p/1000 ft <sup>2</sup>	- Heated to 72 °F, setback to 68 °F during unoccupied hours. - cooled to 75 °F, cooling off during unoccupied hours.	- CoV EMG v2.0, which references NECB-2011 Sched C - ASHRAE 62.1-2001 occupancy density
Residential suites	24/7	# Beds + 1	- Heated to 72 °F, setback to 68 °F during unoccupied hours. - Cooled to 75 °F	CoV EMG v2.0, which references NECB-2011 Sched G
Daycare	15/5	50 p/1000 ft <sup>2</sup>	- Heated to 72 °F, setback to 68 °F during unoccupied hours. - cooled to 75 °F, cooling off during unoccupied hours.	- CoV EMG v2.0, which references NECB-2011 Sched D - ASHRAE 62.1-2001 occupancy density
Commercial Retail Units (CRUs)	13/7	30 p/1000 ft <sup>2</sup>	- Heated to 72 °F, setback to 68 °F during unoccupied hours. - cooled to 75 °F, cooling off during unoccupied hours.	- CoV EMG v2.0, which references NECB-2011 Sched C - ASHRAE 62.1-2001 occupancy density
Co-tutor (Office)	16/5	7 p/1000 ft <sup>2</sup>	- Heated to 72 °F - Cooled to 75 °F	- CoV EMG v2.0, which references NECB-2011 Sched A - ASHRAE 62.1-2001 occupancy density

Schedules

Residential Schedule | Co-tutor (Office) Schedule



Daycare Schedule | Commercial Retail Unit (CRU) Schedule

