PLANNING FOR A HEALTHIER CAMPUS

Recommendations on the feasibility of adopting the WELL v2 Building Standards

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Contents

Executive Summary

Health and well-being conditions are a major factor that influence the type of experience members of an institutional campus have on a day-to-day basis. It is extremely crucial to ensure that the indoor space that staff, faculty, students, and employees dwell in for a large part of their time, are created with well-being enhancement in mind. Quite often, campus buildings are built with features that cater to the external environment, but building planners and designers often forget that the interior environment is just as important. Building for well-being is often lost in the race to become the most sustainable or green campus. It is just as important for campus buildings to achieve well-being certification as it is to achieve green building certifications. The goal of this report is to advocate for the implementation of the WELL v2 Standards at all three University of Toronto campuses. WELL allows building projects to implement well-being features in its buildings within the concept areas of Air, Water, Light, Nourishment, Sound, Movement, Material, Thermal Comfort, Mind, and Community, by providing a checklist of criteria – some of which are mandatory (preconditions), and some of which are optional (optimizations).

In order to determine the feasibility of adopting WELL, the WELL criteria within each concept area has been compared to 22 U of T design standard documents that contain building design criteria that must be met during the construction of any new building on either of the three U of T campuses. Each comparison asks, "does U of T meet WELL's standard?" The WELL Standards have also been compared to other resources publicly provided by U of T on its various websites. The University of British Columbia and the University of California, Berkeley were also assessed in terms of the quality of and frequency of WELL or well-being initiatives that the institutions have implemented.

Analysis of the various sources showed that high levels of overlap existed between U of T's initiatives and the WELL concept areas indicating that it would be feasible to implement the WELL v2 framework to provide a structured approach to building design. Furthermore, the Crossfits and Alignments between LEED and WELL ensure that WELL can easily be integrated into U of T's LEED certified buildings as well. However, before WELL can be properly implemented, all U of T documents and resources meeting the WELL concept areas need to be streamlined and stored in one searchable location to provide standardization.

Introduction

Consensus has yet to be developed around a single, concrete definition for well-being, however, in the simplest of terms, the concept of well-being can be understood as the "state of being happy, healthy, or prosperous"[1]. Through every individual and/or group attempt to constrict the word to a single sentence that can be used universally, the major barriers that have arisen are often associated with its intangible nature and the ease with which stakeholders can confuse the process of its 'definition' with that of 'description'[2]. Most information that exists today tends to forage into the realm of the dimensions that constitute well-being rather than focusing on providing an exact meaning. However, while work still needs to be carried out on achieving this goal, there is current, mutual agreement that well-being is a multidimensional concept that takes into consideration elements such as, but not limited to, physical, mental, social, psychological, emotional, developmental, and economical circumstances, along with feelings of autonomy, positivity, happiness, and satisfaction[3] It is the levels and interactions of these elements within an individual's life that determine the overall well-being of that person within a period of time[4]

Unfortunately, the aforementioned understanding of well-being – while used frequently, fails to highlight the underlying materialistic attribute that has been attached to it. Well-being is often perceived widely through an economic lens, which shows it as a "utility or satisfaction" that can only be achieved after consuming certain materials or goods[5] However, it is important to note that despite the high standard of living in certain communities, families, or individual lives, there is sometimes still no improvement in overall well-being indicating that the two factors; wealth and well-being, are not synonymous[6]. It is argued that well-being is in fact, connected to a larger, overarching factor which is the world around us, or our environment. Well-being and sustainability are interdependent ideologies whereby human well-being relies heavily on the surrounding environment and ecosystems for both its material and innate needs, and in turn, the ecosystem is affected by the process of pursuing well-being and the positive or negative effects associated with it[7].

Quite often, stakeholders interested in either of the concepts fail to recognize the synergy that exists between them and consider each as a separate entity from the other. This is a major issue that is seen commonly in urban areas where building design and construction processes often do not consider well-being practices in tandem with sustainable or 'green' practices, and vice versa. Considering the context of this report, which is focusing on well-being within the campus setting, most post-secondary institutions also choose to focus on implementing sustainability criteria such as, but not limited to, minimizations of energy and water use, and increase in renewable energy source usage as the main guidelines being considered during the

[1] https://www.merriam-webster.com/dictionary/well-being
[2] Dodge, R., Daly, A., Huyton, J., & Sanders, L. (2012). The challenge of defining wellbeing. *International Journal of Wellbeing*, *2*(3), 222-235. https://doi.org/10.5502/ijw.v2i3.4
[3] https://www.cdc.gov/hrqol/wellbeing.htm
[4] https://jamanetwork.com/journals/jama/article-abstract/2330497
[5] Helne, T., & Hirvilammi, T. (2015). Wellbeing and sustainability: A relational approach. *Sustainable Development*, *23*(3), 167-175. https://doi.org/10.1002/sd.1581
[6] Helne, T., & Hirvilammi, T. (2015). Wellbeing and sustainability: A relational approach. *Sustainable Development*, *23*(3), 167-175. https://doi.org/10.1002/sd.1581
[7] Helne, T., & Hirvilammi, T. (2015). Wellbeing and sustainability: A relational approach. *Sustainable Development*, *23*(3), 167-175. https://doi.org/10.1002/sd.1581

planning and design process for campus buildings. Well-being factors are limited to being offered as campus services rather than being considered as integral components in campus design. Considering that humans tend to spend 90% of their time indoors[8], it is equally important to integrate well-being criteria with sustainability criteria during the building planning and design process in order to provide building occupants with a holistic experience that allows them to not only practice sustainable behavior through green building initiatives, but also improves their health and well-being through factors such as proper ventilation and filtration, eradication of biological, physical, and chemical hazards, provision of wellness programs, physical activity space, natural lighting, eating areas and maintenance initiatives[9], during the duration of their stay within the buildings. Such features can be achieved through the implementation of specific standards that serve as benchmarks as to what the ideal building looks like in terms of green and health and well-being related features. Two examples of standards are the Leadership in Energy and Environment Design (LEED) which is a certification system that "recognizes buildings that are efficient, cost-effective, and better for occupants and the environment"[10], and the WELL Standards which focus on providing guidelines for occupant health in terms of factors such as air, water, nourishment, light, and so on[11].

The University of Toronto – which is the institution being considered in this report, has four LEED silver buildings, two LEED gold building, and one LEED gold renovation building – to name a few[12]. In terms of other sustainability initiatives, U of T recently launched its Low Carbon Action Plan which highlights its main goal of reducing GHG emissions by 37% from its 1990 levels by 2030[13]. The St. George campus in particular has a Green Offices certification program which aims to highlight sustainable practices being conducted at U of T. it assigns a number of points to these practices based on their difficulty and impact levels. Practices can be classified as Sprout, Sapling, Tree, and Forest. In addition, the practices can be categorized into the following sections[14]: Procurement, Waste Reduction, Paper/Printing, Energy Conservation, IT Use & Disposal, Education & Awareness, Transportation, Kitchen, Shared Areas, Food & Beverage

Apart from this, U of T has also signed the "Investing to Address Climate Change" charter in order to combat climate change through responsible investing practices[15] and has conducted energy reduction projects in the Robarts Library, Medical Science, and OISE buildings through the implementation of HVAC control systems. In terms of well-being

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[8] Allen, J. G., MacNaughton, P., Laurent, J. G., Flanigan, S. S., Eitland, E. S., & Spengler, J. D. (2015). Green buildings and health. *Current Environmental Health Reports*, *2*(3), 250-258. https://doi.org/10.1007/s40572-015-0063-y

[9] Allen, J. G., MacNaughton, P., Laurent, J. G., Flanigan, S. S., Eitland, E. S., & Spengler, J. D. (2015). Green buildings and health. *Current Environmental Health Reports*, *2*(3), 250-258. https://doi.org/10.1007/s40572-015-0063-y

[10] https://www.ebpsupply.com/blog/what-is-leed-certification

[11] Allen, J. G., MacNaughton, P., Laurent, J. G., Flanigan, S. S., Eitland, E. S., & Spengler, J. D. (2015). Green buildings and health. *Current Environmental Health Reports*, *2*(3), 250-258. https://doi.org/10.1007/s40572-015-0063-y

[12] www.fs.utoronto.ca › wp-content › uploads › 2015/10….

[13] https://www.fs.utoronto.ca/sustainability-office/publications/low-carbon-action-plan

[14] https://www.fs.utoronto.ca/SustainabilityOffice/Programs/GreenOffice/

[15] https://www.utoronto.ca/news/universities-sign-u-t-led-responsible-investment-charter-help-address-climate-change

initiatives, U of T provides tri-campus services in the emotional, physical, financial, social, and mental well-being categories through its Wellness Hub. It also provides allergy, disability, mental health, immunization, food nutrition consultation & education, Tuberculosis, and sexual and reproductive health services[16]. However, unlike the achievement of LEED certification across multiple buildings, U of T does not have WELL accreditation across its campuses which raises the question that perhaps U of T needs to start considering both sustainability and wellness criteria in its building design processes i.e., they should aim to achieve WELL certification along with LEED certification to benefit the internal and external campus environments and improve personal well-being.

Based on the above information, the goal of this report is to provide an analysis of the current sustainability and well-being practices at U of T in order to determine whether the WELL standards will be a feasible framework to adopt. The aim is to provide an insight into improved academic building design and operation recommendations to improve the health and well-being of those associated with U of T such as faculty, students, and staff members. This report will contribute to U of T's increasing literature and information on sustainable building design principles that take health and well-being into account and may serve to further research around well-being building standard tools.

WELL

International WELL Building Institute (IWBI)[17]

The International WELL Building Institute (IWBI) is the first organization to co-develop and promote a scaled rating system through which interior spaces in buildings, communities, and organizations are able reach a particular benchmark threshold in improving and advancing health and wellness (cite 12). This rating system is known as the WELL Building Standard and has been implemented on a global scale since its inception. Through this program, the IWBI has managed to mobilize the concept of wellness within internal settings as the system focuses specifically on how buildings can contribute to providing better levels of comfort, health, and wellness to its occupants. The IWBI is also in charge of managing IWBI membership, conducting relevant research, advocating for health and wellness policies, and developing educational material. Actual WELL Certification is administered by the Green Business Certification Inc. (GBCI) through its collaborative deal with the IWBI.

WELL Building Standard[18]

The WELL Building Standard is the ideal standard for buildings looking to implement, validate, and measure human health and wellness features within its interior spaces and communities. The framework has been created based on scientific and medical research that looked into the various environmental, health, behavioral, and demographic factors that affect wellness and integrated these factors within the context of the building design and construction process.

[16] https://studentlife.utoronto.ca/department/health-wellness/
[17] https://studentlife.utoronto.ca/department/health-wellness/
[18] https://www.wellcertified.com/certification/v2/

WELL v2: Equitable, Local, Dynamic[19]

WELL v2 builds upon WELL v1 through the inclusion of additional consultation with health and building experts and researchers, previous and current users, and public health professionals. Through this version, WELL aimed to achieve the status of being globally accessible and flexible by reducing barriers to entry and providing more equitable choice to all demographics including the disadvantaged and vulnerable populations. In short, WELL v2 relies on the principles of being equitable, global, evidence-based, technically-robust, resilient, and customer-focused (Refer to Appendix A to understand the difference between WELL v1 and v2).

WELL Architecture[20]

WELL v2 covers ten concepts: Air, Water, Nourishment, Light, Movement, Thermal, Comfort, Sound, Materials, Mind, and Community. Each concept consists of a specific number of features and criteria that must be/could be met. These are known as preconditions and optimizations.

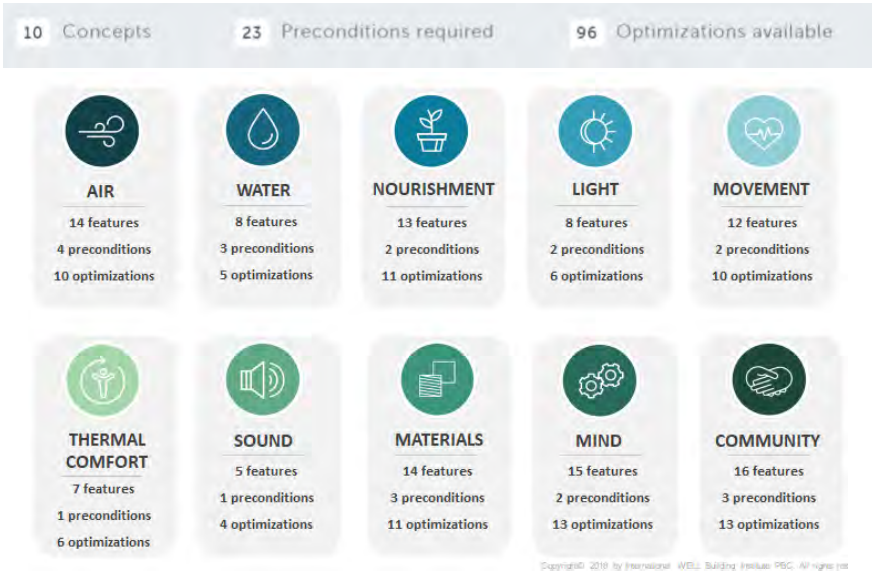
- (Universal) Preconditions

Preconditions refer to the fundamental features of the WELL framework that are mandatory in order to achieve certification. All parts of the preconditions for each of the concept areas of interest must be met.

- (Flexible) Optimizations

Optimizations are optional criteria that can be fulfilled by a project to obtain more points and demonstrate a higher level of achievement in WELL. These are enhancements that can be added based on the individual requirements of a particular project.

Preconditions and Optimizations for 10 Concept Areas



Source: https://resources.wellcertified.com/articles/well-tip-understanding-the-comparison-between-well-v1-and-well-v2-pilot/

[19] https://v2.wellcertified.com/v2.1/en/overview
[20] https://v2.wellcertified.com/v2.1/en/overview

Precondition and Optimization Descriptions[21]

Concept Area	Description
Air	Focuses on the improvement of overall indoor air quality by considering features such as, but not limited to, ventilation, smoke and construction pollution, and VOC and microbe levels
Water	Focuses on improving overall water quality by monitoring moisture, contaminant, and bacteria levels
Nourishment	Focuses on improving the quality of food being provided through its focus on artificial and refined ingredient levels, food preparation techniques, and nutrition education
Light	Focuses on providing optimal levels and types of lighting for better mental, physical, and biological health
Movement	Focuses on promoting physical movement through open space design, amenities that support exercise, and promotion of the importance of
Thermal Comfort	Focuses on providing optimal thermal levels for occupants and controlling dust and humidity levels
Sound	Focuses on controlling for acoustical disturbances and providing optimal sound levels
Materials	Focuses on controlling for hazardous material, waste, and emissions
Mind	Focuses on providing mental health support, access to nature, and support for opioid, tobacco, and other substance use
Community	Focuses on providing services that benefit community members such as new parents or mothers, along with health, housing, and emergency support

Weighting and Scoring System[22]

There are a total of 110 points that can be achieved by each project. In order to achieve different tiers of certification, all preconditions, along with a specific number of points respective to each level must be achieved:

1. WELL Silver Certification: 50 points
2. WELL Gold Certification: 60 points
3. WELL Platinum Certification: 80 points

[21] https://v2.wellcertified.com/v2.1/en/concepts
[22] https://v2.wellcertified.com/v2.1/en/overview

In addition, all projects must earn a minimum of two points and a maximum of 12 points per concept area. No more than 100 points can be achieved across all ten concepts (10 points from the 110 are reserved for the innovation area).

Crosswalks & Alignments[23]

IWBI recognizes that there are overlaps or equivalents that exist between WELL and other green building certification systems. Based on this, it has created WELL Crosswalks that are tables which identify the synergies between WELL and other green building standards. This allows buildings to incorporate both sustainability and wellness features within their building processes and provides ease in terms of streamlining. Since U of T has LEED certification, it makes sense for the Crosswalks between LEED and WELL to be analyzed (Refer to Appendix B)

Goals & Objectives

The main goal of this report is to provide sufficient information to determine whether well-being initiatives and best practices can be included in the building planning, design, and construction processes at U of T using the WELL v2 Standard as a guiding framework, hereby allowing the integration of WELL's health and well-being-oriented indoor space features with pre-existing green and sustainable features that U of T already has in place. Based on this, the overall idea was to evaluate and determine the feasibility of the adoption of the WELL v2 Standard by the University of Toronto (Planning Division) in order to enhance the health and well-being of university members and the atmosphere of future buildings.

To assess the potential utility of adopting the WELL standard, the following three objectives were established:

1. To assess the existing health and well-being initiatives that U of T has
2. To compare U of T's standards and initiatives to not only the criteria provided by the WELL Standard in its 10 concept areas, but to those initiatives implemented by other North American Campuses
3. To align U of T's initiatives with current best practices relating to on-campus sustainability and well-being through recommendations which will answer the ultimate question of whether U of T should adopt the WELL v2 Building Standard

Methodology

The method used to achieve the aforementioned goals and objectives was that of gap analysis. This process was chosen due to its effectiveness in comparing actual performance (current UofT well-being initiatives) with what was desired (WELL v2 preconditions and optimizations). This method allowed us to identify gaps and overlaps between university initiatives, policies, and strategies and the WELL v2 Building Standard.

[23] https://standard.wellcertified.com/well-crosswalks?_ga=2.21359163.1806589131.1531080716-1388703945.1526418228

Data Sources

The following data sources were used in the comparison and analysis process:

- U of T Building Design Standard Documentation

There were approximately 22 documents that were looked at to assess the presence or lack thereof of preconditions and optimizations provided by WELL in the 10 concept areas. The themes and aspects they covered were as follows:

1. Safety Issues and concerns
2. Barrier Free Accessibility
3. Cleaning & Caretaking Issues
4. Postal Mail Management
5. Waste Management
6. Cash Handling
7. Environment
8. Landscaping
9. New Roofs
10. Roof Repairs
11. Door Hardware
12. Carpets
13. Fire Alarm Systems
14. Fire Sprinkler Systems
15. Elevators
16. Mechanical
17. Building Automation Systems (version 7)
18. Energy Modelling & Utility Performance Standard, University of Toronto, Tri-Campus (Updated 2020 July)
19. Electrical
20. Security and Access Control
21. Communications Infrastructure Specifications – Standards and Practises

- Departmental Websites & Miscellaneous U of T Documentation

These websites and documentation were analyzed to find areas of WELL concepts that were not necessarily covered within the U of T building design standards, but nevertheless had initiatives in place among all three campuses. Examples of the websites and documentation that were mainly looked at were:

1. Student Life: https://studentlife.utoronto.ca/
2. Food Services: https://ueat.utoronto.ca/
3. Environmental Health & Safety Program – Policies, Procedures and Guidelines: https://ehs.utoronto.ca/resources/policies-and-procedures/
4. Mould Control Program Plan
5. Food Services Operating Principles
6. Safe Food Handling Guidelines
7. Campus Masterplans

And so on…

- Other Institution Websites and Documentation

The two universities that were looked at were the University of British Columbia and the University of California, Berkeley. Like U of T, their departmental websites and publicly available documentation were assessed to get an idea of how far ahead, behind, or levelled they were with U of T in terms of well-being.

Findings

Case Studies – Other Institutions

The following two institutions were looked at in the initial stages of the project to determine areas, strategies, and/or initiatives that U of T could benefit from. The prominent achievements have been bolded

University of British Columbia

UBC's Vancouver campus has **31 LEED Gold or higher standard buildings**, while U of T only has 11. Its CIRS (Centre for Interactive Research on Sustainability) building which serves as a **living laboratory on campus**, was first conceived in 1999 by Dr. John Robinson; the advanced and scientific green ideas made it stand out in that era and achieved LEED Platinum Certification and many sustainability and high-performance awards in the later time.

Built & Natural Environments	**Active Transportation** Increase trips to and from UBC made by walking, cycling or transit by 2025*	Baseline and target established % commuting trips made by walking, cycling, or transit
	Complete Communities Increase opportunities for people to learn, work, play and live on our campuses	Baseline and targets establisedh Change in housing, child care, and community amenities.

UBC has created a **strategic framework for wellbeing**. They have chosen to integrate wellbeing into its overall strategic plan and operations rather than treating it as a separate sector. They also have specific targets in the areas of **Collaborative Leadership, Food & Nutrition, Physical Activity, Social Connection, Mental Health & Resilience, and Built & Natural Environments**[24], that they want to achieve. Each area of interest also has specific targets that need to be attained and indicators that will be used to measure the progress. U of T currently does not have a system of measurement in place to understand its performance in areas of well-being. An example of targets and indicators in the Built & Natural Environment sector is:

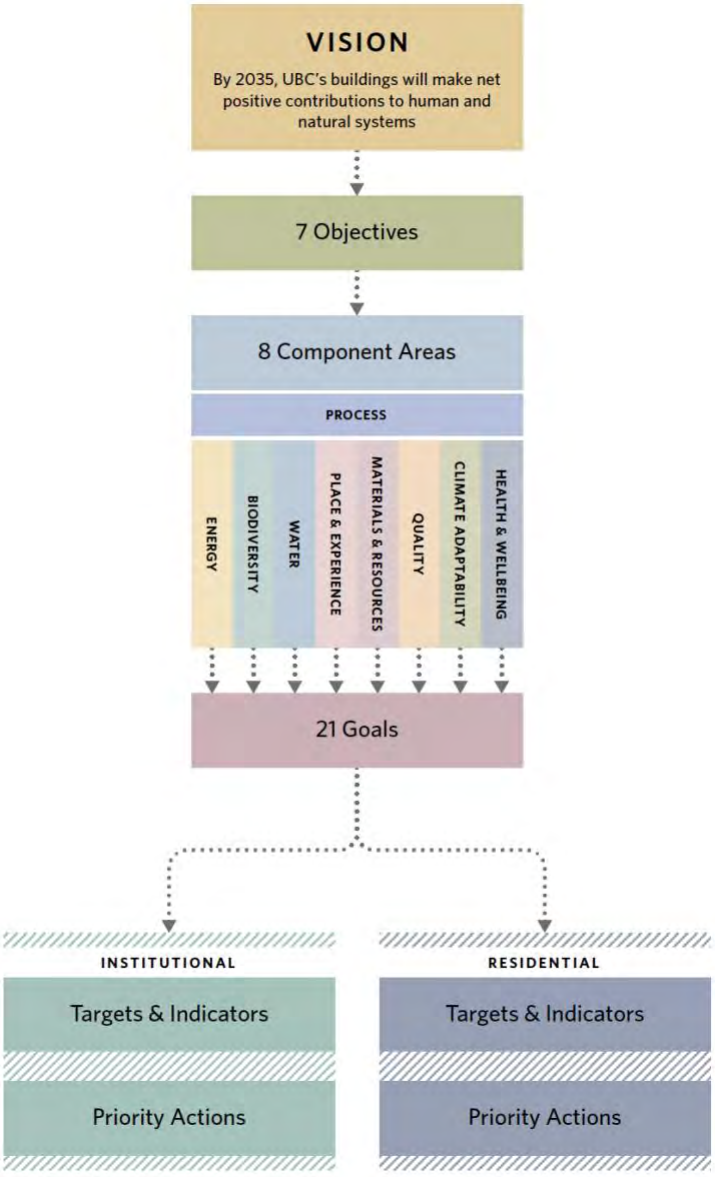
Source: https://wellbeing.ubc.ca/sites/wellbeing.ubc.ca/files/u9/wellbeing_strategic_framework_FINAL_0.pdf

To achieve its sustainability goals, UBC has formulated a **LEED Implementation Guide for LEED v4** in-line with all UBC policies which aids design teams committed to obtaining LEED Gold Certification on new UBC building projects. The guide also helps to indicate which LEED credits are mandatory, optional, or not available at UBC. It promotes high performance and high-quality building infrastructure. As of 2008, all new construction and renovations of UBC must obtain the LEED Gold Certification. UBC has an ultimate goal that by 2035, buildings will be able to make net positive contributions to both nature and humans[25]

UBC addresses many of WELL features into buildings through its own guidelines, policies, and design processes. UBC has also developed a **Green Building Action Plan** to specifically guide the institutional and residential building process. The GBAP plan explains the campus' design processes, and contains eight components: **Energy, Water, Materials & resources, Biodiversity, Health & wellbeing, Quality, Climate Adaption, and Place & experience** – topics that can easily aligned with WELL preconditions and optimizations.

[24] https://wellbeing.ubc.ca/

[25] Green Buildings. (2019, March 14). Retrieved from https://sustain.ubc.ca/campus/green-buildings



Source: https://planning.ubc.ca/sustainability/sustainability-action-plans/green-building-action-plan

UBC also puts effort into improving both physical and mental health when making building design decisions. For example, their buildings focus on providing pleasant temperature, high indoor air quality, proper daylight levels, acoustic levels, exterior views, and sufficient indoor plants to ensure health and wellbeing[26].

[26] Campus and Community Planning. (2018). [CCP]. UBC GREEN BUILDING ACTION PLAN. Retrieved from https://planning.ubc.ca/sites/default/files/2019-11/PLAN_UBC_Green_Building_Action_Plan_Full.pdf

University of California, Berkeley

Chou Hall has been the first academic construction in the United States to achieve both the **WELL certificate and LEED Platinum**, and it has also joined the **Zero Waste initiative**, designated to divert approximately 90% of the waste from landfills. Chou Hall has also achieved **WELL v1 certification. It has met all 41 preconditions** of the WELL v1, but it does not plan on achieving any of the optimizations. UCB has also made WELL-related information transparent and accessible to the public[1]. The information of preconditions and detailed measurement of each category can be accessed through the introductory webpage of Chou Hall. Numeric data and details for WELL achievements are publicly available. The public can view the specific value of each inspection to compare whether the value of each independent space meets the standard. The following table is an example of numeric value from the website of the display of the Air sector of WELL v1. for Chou Hall. The air-related values of each space or room are displayed, and those that have not met the standards are marked appropriately.

1456 - Connie & Kevin Chou Hall
Appendix A
December 4 - 6, 2018 On-site Performance Verification - Summary of Results

AIR

GENERAL OBSERVATIONS:
There were no unusual conditions observed during the indoor air quality testing. Sampling locations were selected as unoccupied classrooms in between scheduled classes and finals. Due to heavy occupancy, and operable windows being shut due to rain - HVAC system was running constantly during PV days, no natural ventilation times during PV even though building is equipped to run in natural ventilation mode.

All values reported by the lab as "ND" are not detected above the detectible limit for the analysis method.

1. Air Quality Standards

	Part 1		Part 2				Part 3	
Location	Formaldehyde (ppb)	Total Volatile Organic Compounds (µg/m³)	Carbon Monoxide (ppm)	PM2.5 (ug/m3)	PM10 (ug/m3)	Ozone (ppb)	Radon (pCi/L)	Outcome
WELL Building Standard threshold limit	27	500.0	9.0	15.0	50.0	51.0	4.0	
Major 1 - Room 100	14.28	33.2	0.0	TBD	35.00	0.0	N/A	TBD
Major 2 - Room 370	15.78	52.8	0.0	TBD	33.00	0.0		TBD
Minor 1 - Room 470	N/A		0.0	TBD	31.00	0.0		TBD
Minor 2 - Room 670			0.0	TBD	30.00	0.0		TBD
Minor 3 - 2nd floor lounge			0.0	TBD	35.00	0.0		TBD
Minor 4 - Room 580/544			0.0	TBD	31.00	0.0		TBD
Radon - Basement			N/A				0.6	MET

Reference Testing Results

Location	Formaldehyde (ppb)	Total Volatile Organic Compounds (µg/m³)	Carbon Monoxide (ppm)	PM2.5 (ug/m3)	PM10 (ug/m3)	Ozone (PPB)	Radon (pCi/L)
WELL Building Standard threshold limit	27	500.0	9.0	15.0	50.0	51.0	4.0
Outdoor Air Baseline - Morning	N/A		0.0	TBD	30.00	0.0	N/A
Outdoor Air Baseline - Afternoon			0.0	TBD	37.00	28.0	
Outdoor Air Baseline - Evening			0.0	TBD	33.00	21.2	
Field Blanks	ND	ND	N/A				

Source: https://haas.berkeley.edu/wp-content/uploads/WELL-Building-Standard-v1-with-2017-Q4-addenda.pdf

Alongside WELL data, various mental health and nutrition-related information has also been made available, similar to that of U of T.

Summary of Institutional Findings

	UBC	UCB
Air		
Water		
Nourishment		
Light		
Movement		N/A
Thermal Comfort		N/A
Sound		N/A
Materials		N/A
Mind		
Community		N/A
Innovation		

Color code (Comparing to UofT)	
	Gap
	Equivalent

This summary table shows the gaps between U of T and UBC + UCB in terms of the ten WELL concept areas. The green boxes for each column represent the fact that both U of T and the institution representing that column have initiatives in place for that specific concept area. The red boxes represent the fact that U of T is lacking in initiatives in those specific concept areas, but the other institution is not. For example, compared to UBC, U of T is behind in the areas of Water, Materials, Mind, and Innovation. This is because, as mentioned before, UBC has implemented its Green Building Action Plan which provides regulations and standards related to water quality and materials used for buildings, whereas U of T does not have exact policies in these aspects. In terms of Mind, specifically, U of T buildings do not consider mental health related design features, settings, and equipment, although there are many standards and helpful resources to support student mental health on a general level.

The "N/A" in five categories under the column of UCB exist because UCB has adopted WELL v1 in which Thermal Comfort, Sound, Materials, and Community did not exist as concept areas. In addition, Movement was considered as 'Fitness' in v1 and contained different preconditions and optimizations. In terms of Nourishment and Mind, UCB considers them within their building design processes while U of T considers them under separate medical and administrative sectors. In terms of Air, UCB provides numerical details of air quality on its website. For example, there is a PM (particle pollution) value of 2.5 in every room in the building. U of T does not provide this data. The rest of the green cells are what U of T has which is equivalent with the other two institutions.

WELL vs. U of T

This chart compares the 10 WELL Concept Areas (vertical) to the 22 U of T Design Standard documents (mentioned above) (horizontal)

- Air (A)
- Water (W)
- Nourishment (N)
- Light (L)
- Movement (V)
- Sound (S)
- Thermal (T)
- Materials (X)
- Mind (M)
- Community (C)
- Innovation (I)

Reading the technical analysis: Does UofT mee WELLv2 (Q4) guidelines?

We have broken the WELLv2 technical specifications into 21 Sections, each section asks the question,

"[Does UofT Design Standard (+ Relevant Policy) meet WELL's] [Number of] [Theme] [Preconditions| Optimizations| Innovations]"

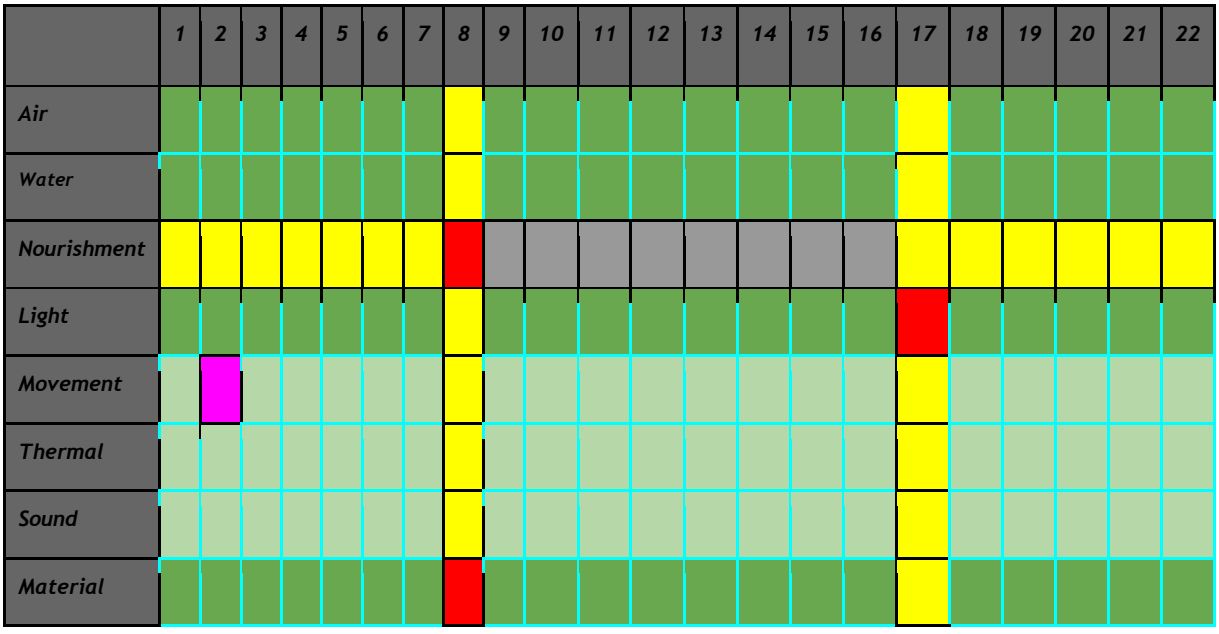
Example 1 of the 22 Documents:

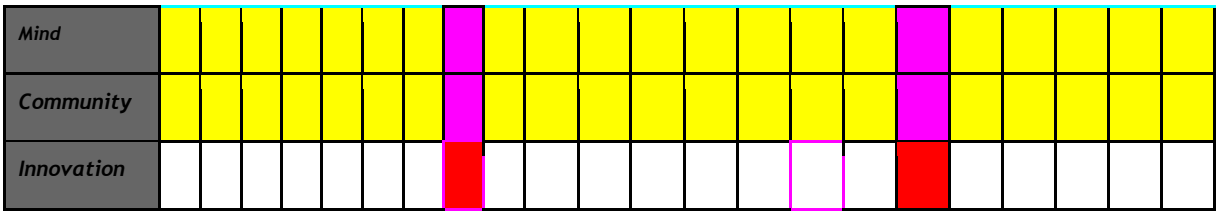
- [Does UofT meet WELL's] 4 Air Preconditions

Example 14 of the 22 Documents:

- [Does UofT meet WELL's] 12 Nourishment Optimizations

After conducting comparison on each of UofT's 22 design standard documents to the WELLv2 (Q4) standard, the following summary chart was produced





The legend for the table is as follows:

- Gap to adopt/*Design Gap but documents exist
- Focus area for where gap can be addressed
- Major gap with recommendations
- Equivalent provision
- Strong alignment
- UofT Extends, with adoption of recommendations
- No Overlap (ex, elevator documents have nothing to do with nourishment)

WELL vs. Other Institutional Resources

Other resources such as departmental websites and documentation were looked at in order to determine whether WELL concepts and criteria that were not being addressed in the 22 design documents, were actually being addressed elsewhere through other mediums. The search was conducted by using WELL preconditions and optimizations as keywords in Google, paired with the terms "U of T" or "University of Toronto" or "University of Toronto Campus". Based on the analysis of the information, it was found that the design documents addressed safety requirements, accessibility concerns, products and methodologies used in the construction process, and general design issues[27]. Thus, concepts such as Light, Water, Materials were addressed in these documents, and concepts such as Nourishment, Mind, and Community were addressed through other resources (Refer to Appendix C for a detailed breakdown of the information available through other mediums regarding the 10 concept areas)

Recommendations

The overall recommendation is for U of T to consider adopting the WELL v2 Standard. As seen in the summary tables in the 'Findings' section and through the comparison table in Appendix C, there are a lot initiatives, strategies, and areas that overlap with, or are similar to, the WELL concept areas. However, the main issue that U of T currently faces is that there is a lack of standardization across the documentations that exist across all three campuses. Even within the 22 design documents themselves, each document follows a different format from the other. Furthermore, it is known that the design document requirements are mandatory for any building project, but it is not clear whether other resources that we looked at such as the mould control plan document or the hazardous waste material provided on the U of T websites are considered in the design process as well.

A recommendation to kick-start or ease the process of adopting WELL would be to create a plenary database of all such documentation that is also searchable. This would allow

[27] https://www.fs.utoronto.ca/DesignStandards/PartOne

information that is usually hard to search up immediately, to be available through a search feature. In addition, perhaps it can also be made mandatory for design projects to also consider other documentation as well along with the 22 design standards. However, if consultation of such documents is made a must, then another recommendation would be to streamline all of the information to follow a specific format. Furthermore, consulting the Crossfits and alignments (Appendix B) between WELL and LEED will also make it easier for U of T to integrate WELL features into its pre-existing LEED certified buildings. Should WELL be formally adopted, then U of T would benefit from creating a WELL implementation guideline In terms of the technicalities of adopting WELL v2 features, please refer to Appendix H

Appendices

Appendix A – Difference between WELL v1 and V2[28]

AIR	V1	V2
Preconditions	12	4
Optimizations	17	10

WATER	V1	V2
Preconditions	5	3
Optimizations	3	5

NOURISHMENT	V1	V2
Preconditions	7	2
Optimizations	7	11

LIGHT	V1	V2
Preconditions	4	2
Optimizations	7	6

MOVEMENT	V1	V2
Preconditions	2	2
Optimizations	6	10

THERMAL COMFORT	V1	V2
Preconditions	N/A	1
Optimizations	N/A	4

[28] https://resources.wellcertified.com/articles/well-tip-understanding-the-comparison-between-well-v1-and-well-v2-pilot/

SOUND	V1	V2
Preconditions	N/A	1
Optimizations	N/A	4

MATERIALS	V1	V2
Preconditions	N/A	3
Optimizations	N/A	11

MIND	V1	V2
Preconditions	5	2
Optimizations	12	13

COMMUNITY	V1	V2
Preconditions	N/A	3
Optimizations	N/A	13

Appendix B – LEED & WELL Crosswalks[29]

WELL v2 pilot / LEED BD+C: New Construction crosswalk:

LEED prerequisite / credit name	LEED alignment notes	WELL Feature part name	WELL alignment notes	Equivalent / aligned? (E / A)	Difference between requirements (if aligned)
LTc Surrounding Density and Diverse Uses		V05.1 / 2 Points Select Sites with Diverse Uses		A	WELL requires that the diverse uses must be within 400 m [0.25 mi] instead of 800 m [0.5 mi].
LTc Access to Quality Transit		V05.2 / 2 Points Select Sites with Access to Mass Transit		E	
LTc Bicycle Facilities		V04.1 / 2 Points Provide Bicycle Storage		E	
		V04.2 / 2 Points Provide Facilities for Active Occupants		A	WELL requires lockers to be provided.
		V05.4 / 2 Points Select Sites with Bike Friendly Streets		E	
LTc High Priority Site	Option 3	X06.1 / 2 Points Implement Site Assessment and Cleanup			
SS Open Space		V09.2 / 1 Points Provide On-Site Pedestrian Destinations		A	WELL requires projects to provide two specific elements.
		M09.1 / 1 Points Provide Enhanced Access to Nature		A	LEED requirements are aligned with M09 Part 1a.
EA Fundamental Commissioning and Verification		A03.2 Conduct System Balancing		E	
EA Enhanced Commissioning EQc Enhanced Indoor Air Quality Strategies	LEED EA Option 2 and LEED EQc Option 1a	A09.1 / 1 Points Design Healthy Envelope and Entryways		E	
MRc Building Product Disclosure and Optimization – Material Ingredients	Option 2	X13.1 / 2 Points Select Optimized Materials		E	
	Option 1	X14.1 / 2 Points Promote Ingredient Disclosure		E	
EQp Minimum Indoor Air Quality Performance		A03.1 Ensure Adequate Ventilation		E	

[29] https://standard.wellcertified.com/well-crosswalks?_ga=2.21359163.1806589131.1531080716-1388703945.1526418228

LEED prerequisite / credit name	LEED alignment notes	WELL Feature part name	WELL alignment notes	Equivalent / aligned? (E / A)	Difference between requirements (if aligned)
EQp Environmental Tobacco Smoke Control		A02.1 Prohibit Indoor Smoking	Dwelling units should meet option 1 only	E	
		A02.2 Prohibit Outdoor Smoking		A	The LEED credit has fewer requirements concerning outdoor smoking.
EQc Enhanced Indoor Air Quality Strategies	Option 2b	A06.1 / 3 Points Increase Outdoor Air Supply	Limited to 1 point.	E	
	Option 2	A08.1 / 1 Points Implement Indoor Air Monitors		A	The LEED credit includes CO_2 monitoring, one of the three contaminants that WELL requires.
	Option 1c	A12.1 / 1 Points Implement Particle Filtration		E	
EQc Low Emitting Materials	Compliant product class: Furniture	X11.1 / 2 Points Manage Furniture and Furnishings Emissions	Option 1, 2 pts	E	
	Compliant product classes: Ceilings, walls, thermal, and acoustic insulation OR Flooring	X11.2 / 1 Points Manage Flooring and Insulation Emissions	Option 1, 1 pts	E	
	Compliant product classes: Interior paints and coatings applied on site AND Interior adhesives and sealants applied on site	X12.1 / 3 Points Manage Product Emissions: Adhesives, Sealants, Paints and Coatings	Option 1, 3pts	E	
EQc Indoor Air Quality Assessment EQc Construction Indoor Air Quality Management Plan		A04.1 Mitigate Construction Pollution	Projects should achieve both LEED credits to achieve WELL Feature A04 Part 1.	E	
EQc Indoor Air Quality Assessment	Option 2	A01.1 Meet Thresholds for Particulate Matter		A	WELL requires post-occupancy performance testing and LEED testing occurs prior to occupancy.
		A01.2 Meet Thresholds for Organic Gases		A	
		A01.3 Meet Thresholds for Inorganic Gases		A	
EQc Thermal Comfort		T01.1 Support Thermal Environment		A	WELL and LEED refer to similar thermal comfort standards but WELL is verified through on-site performance testing.

LEED prerequisite / credit name	LEED alignment notes	WELL Feature part name	WELL alignment notes	Equivalent / aligned? (E / A)	Difference between requirements (if aligned)
		T02.1 / 1 Points Enhance Thermal Environment		A	
		T04.1 / 3 Points Ensure Personal Thermal Comfort	Limited to 2 points	E	
EQc Interior Lighting		L06.1 / 1 Points Manage Brightness		A	Within the LEED credit, Option 2G and 2H are similar to WELL requirements, but there are additional requirements within the WELL Feature.
EQc Interior Lighting		L07.1 / 1 Points Ensure Color Rendering Quality		A	Within the LEED credit, Option 2B is of similar intent but does not address all the WELL requirements
EQc Daylight	2 points in LEED are required.	L01.1 Ensure Indoor Light Exposure		E	
	Option 1	L04.1 / 2 Points Control Solar Glare	Option 2	E	
	2 points in LEED are required for 1 point in WELL. 3 points in LEED are required for 2 points in WELL.	L05.2 / 2 Points Implement Enhanced Daylight Simulation		E	
EQc Quality Views		L05.3 / 1 Points Ensure Views		E	
EQc Acoustic Performance		S01.1 Manage Background Noise Level		E	Award of EQc Acoustic Performance credit is demonstration of compliance with WELL S01.1 and S01.2.
		S01.2 Manage Acoustical Privacy		E	
		S04.1 / 1 Points Meet Thresholds for Reverberation Time		A	While the intent is the same, space types and ranges for reverberation time differ between WELL and LEED.
EQc Acoustic Performance		S05.1 / 2 Points Implement Sound Masking		A	While intent is the same, space types and ranges differ between rating system.

WELL v2 pilot / LEED ID+C: Commercial Interiors crosswalk:

LEED prerequisite / credit name	LEED alignment notes	WELL Feature part name	WELL alignment notes	Equivalent / aligned? (E / A)	Difference between requirements (if aligned)
LTc Surrounding Density and Diverse Uses		V05.1 / 2 Points Select Sites with Diverse Uses		A	WELL requires that the diverse uses be within 400 m [0.25 mi] instead of 800 m [0.5 mi].
LTc Access to Quality Transit		V05.2 / 2 Points Select Sites with Access to Mass Transit		E	
LTc Bicycle Facilities		V04.1 / 2 Points Provide Bicycle Storage		E	
		V04.2 / 2 Points Provide Facilities for Active Occupants		A	WELL requires lockers to be provided.
		V05.4 / 2 Points Select Sites with Bike Friendly Streets		E	
EA Fundamental Commissioning and Verification		A03.2 Conduct System Balancing		E	
EA Enhanced Commissioning	LEED EA Option 2	A09.1 / 1 Points Design Healthy Envelope and Entryways		E	
EQc Enhanced Indoor Air Quality Strategies	LEED EQc Option 1a				
MRc Building Product Disclosure and Optimization – Material Ingredients	Option 2	X13.1 / 2 Points Select Optimized Materials		E	
	Option 1	X14.1 / 2 Points Promote Ingredient Disclosure		E	
EQp Minimum Indoor Air Quality Performance		A03.1 Ensure Adequate Ventilation		E	
EQp Environmental Tobacco Smoke Control		A02.1 Prohibit Indoor Smoking	Dwelling units should meet option 1 only	E	
		A02.2 Prohibit Outdoor Smoking		A	The LEED credit has fewer requirements concerning outdoor smoking.

LEED prerequisite / credit name	LEED alignment notes	WELL Feature part name	WELL alignment notes	Equivalent / aligned? (E / A)	Difference between requirements (if aligned)
EQc Enhanced Indoor Air Quality Strategies	Option 2b	A06.1 / 3 Points Increase Outdoor Air Supply	Limited to 1 point.	E	
	Option 2	A08.1 / 1 Points Implement Indoor Air Monitors		A	The LEED credit includes CO_2 monitoring, one of the three contaminants that WELL requires.
	Option 1c	A12.1 / 1 Points Implement Particle Filtration		E	
EQc Low Emitting Materials	Compliant product class: Furniture	X11.1 / 2 Points Manage Furniture and Furnishings Emissions	Option 1, 2 pts	E	
	Compliant product classes: Ceilings, walls, thermal, and acoustic insulation OR Flooring	X11.2 / 1 Points Manage Flooring and Insulation Emissions	Option 1, 1 pts	E	
	Compliant product classes: Interior paints and coatings applied on site AND Interior adhesives and sealants applied on site	X12.1 / 3 Points Manage Product Emissions: Adhesives, Sealants, Paints and Coatings	Option 1, 3pts	E	
EQc Indoor Air Quality Assessment EQc Construction Indoor Air Quality Management Plan		A04.1 Mitigate Construction Pollution	Projects should achieve both LEED credits to achieve WELL Feature A04 Part 1.	E	
EQc Indoor Air Quality Assessment	Option 2	A01.1 Meet Thresholds for Particulate Matter		A	WELL requires post-occupancy performance testing and LEED testing occurs prior to occupancy.
		A01.2 Meet Thresholds for Organic Gases		A	
		A01.3 Meet Thresholds for Inorganic Gases		A	
EQc Thermal Comfort		T01.1 Support Thermal Environment		A	WELL and LEED refer to similar thermal comfort standards but WELL is verified through on-site performance testing.
		T02.1 / 1 Points Enhance Thermal Environment		A	

LEED prerequisite / credit name	LEED alignment notes	WELL Feature part name	WELL alignment notes	Equivalent / aligned? (E / A)	Difference between requirements (if aligned)
	Requires achievement of "Thermal comfort control" in LEED.	T04.1 / 3 Points Ensure Personal Thermal Comfort		E	
EQc Interior Lighting		L06.1 / 1 Points Manage Brightness		A	Within the LEED credit, Option 2G and 2H are similar to WELL requirements, but there are additional requirements within the WELL Feature.
EQc Interior Lighting		L07.1 / 1 Points Ensure Color Rendering Quality		A	Within the LEED credit, Option 2B is of similar intent but does not address all WELL requirements
EQc Daylight	2 points in LEED are required.	L01.1 Ensure Indoor Light Exposure		E	
	Option 1	L04.1 / 2 Points Control Solar Glare	Option 2	E	
	2 points in LEED are required for 1 point in WELL. 3 points in LEED are required for 2 points in WELL.	L05.2 / 2 Points Implement Enhanced Daylight Simulation		E	
EQc Quality Views		L05.3 / 1 Points Ensure Views		E	
EQc Acoustic Performance		S01.1 Manage Background Noise Level		E	Award of EQc Acoustic Performance credit is demonstration of compliance with WELL S01.1 and S01.2.
		S01.2 Manage Acoustical Privacy		E	
		S04.1 / 1 Points Meet Thresholds for Reverberation Time		A	While the intent is the same, space types and ranges for reverberation time differ between WELL and LEED.
		S05.1 / 2 Points Implement Sound Masking		A	

WELL v2 pilot / LEED O+M: Existing Buildings crosswalk:

LEED prerequisite / credit name	LEED alignment notes	WELL Feature part name	WELL alignment notes	Equivalent / aligned? (E / A)	Difference between requirements (if aligned)
EQp Minimum Indoor Air Quality Performance	Case 1	A03.1 Ensure Adequate Ventilation, A03.2 Conduct System Balancing		E	
EQp Environmental Tobacco Smoke Control		A02.1 Prohibit Indoor Smoking	Dwelling units should meet option 1 only	E	
EQp Green Cleaning Policy		X09.1 / 1 Points Ensure Acceptable Cleaning Practices		A	LEED requires development of guidelines for green cleaning materials. WELL specifically requires that they meet GHS standards.
EQp Green Cleaning Policy EQc Green Cleaning Equipment		X09.2 / 1 Points Implement Acceptable Cleaning Practices		A	WELL has specific requirements on program training, cleaning protocol and product storage.
EQc Enhanced Indoor Air Quality Strategies	Option 2	A08.1 / 1 Points Implement Indoor Air Monitors		A	The LEED credit includes CO_2 monitoring, one of the three contaminants that WELL requires.
	Option 1	A09.1 / 1 Points Design Healthy Envelope and Entryways		A	The WELL Feature requires that 2 of 3 options be selected for compliance. EQc Enhanced Indoor Air Quality Strategies Option 1 is the same as one of the three strategies.
	Option 2	A12.1 / 1 Points Implement Particle Filtration		E	
EQc Thermal Comfort		T01.1 Support Thermal Environment	WELL and LEED refer to similar thermal comfort standards but WELL is verified through on-site performance testing.	A	WELL and LEED refer to similar thermal comfort standards but WELL is verified through on-site performance testing.
		T01.2 / 1 Points Monitor Thermal Parameters	Details of reporting differ. WELL requires data collected to be submitted through WELL online.	A	Details of reporting differ. WELL requires data collected to be submitted through WELL online.
		T06.1 / 1 Points Monitor Thermal Environment		A	
EQc Interior Lighting	Option 1	L08.1 / 1 Points Enhance Occupant Controllability		A	WELL requires occupant control of light levels for all spaces, whereas LEED requires 50% of spaces and only those with individual occupants.
	Option 1	L08.2 / 1 Points Provide Supplemental Lighting		A	WELL requires provision of supplemental lighting for all spaces, whereas LEED requires 50% of spaces and only those with individual occupants.
EQc Daylight and Quality Views	Option 1	L01.1 Ensure Indoor Light Exposure		E	
	Option 1	L05.2 / 2 Points Implement Enhanced Daylight Simulation		A	The LEED credit and WELL Feature are aligned, but the LEED credit does not address all WELL requirements
	Option 2	L05.3 / 1 Points Ensure Views		E	
EQc Integrated Pest Management		X07.1 / 1 Points Manages Pesticides		E	
EQc Occupant Comfort Survey		C03.1 Select Project Survey		A	The LEED and WELL surveys have different question categories. WELL requires submission of aggregate survey data through WELL online.

Appendix C - WELL vs Other U of T resources

Concept Area	Concept Criteria	Medium	Information
AIR	A01 – Fundamental Air Quality		
	A02 – Smoke-Free Environment	Support Resources: https://www.utoronto.ca/smoke-free/resources	Smoking has been banned on all UofT property, whether inside or outside. WELL prohibits indoor smoking and smoking on all decks, patios, balconies, rooftops, and outdoor galleries, but allows smoking after 7.5m/25ft of entrances, operable windows, and building air intakes
	A03 – Ventilation Effectiveness	Article: https://www.utoronto.ca/news/u-t-inspects-upgrades-ventilation-equipment-preparation-gradual-return-campuses-fall	"The upgraded filters, which meet or exceed public health and other experts' recommendations, are rated MERV-13, up from MERV-8 previously. Filters with a higher Minimum Efficiency Reporting Value capture a greater percentage of smaller particles from the air that passes through them. All building ventilation systems at U of T also undergo regular maintenance and filter changes to ensure the air is clean and flowing into and out of the building properly"
	A04 – Construction Pollution Management		
	A05 – Enhanced Air Quality		
	A06 – Enhanced Ventilation	Article: https://www.utoronto.ca/news/u-t-inspects-upgrades-ventilation-equipment-preparation-gradual-return-campuses-fall	"The upgraded filters, which meet or exceed public health and other experts' recommendations, are rated MERV-13, up from MERV-8 previously. Filters with a higher Minimum Efficiency Reporting Value capture a greater percentage of smaller particles from the air that passes through them. All building ventilation systems at U of T also undergo regular maintenance and filter changes to ensure the air is clean and flowing into and out of the building properly"
	A07 – Operable Windows	Article: https://www.fs.utoronto.ca/ArchivedNews/Triple_Bottom_Line_Work/ https://www.fs.utoronto.ca/archivednews/leed-gold-certification/ https://urbantoronto.ca/database/projects/u-t-utsc-instructional-centre	"The University of Toronto used a triple bottom line approach to sustainability in construction of the Administrative Offices at the Examination Centre, incorporating environmental, social and economic factors. Featuring operable windows, unobstructed views to the outdoors, ample natural light, and low VOC furnishings, the work environment has improved productivity and staff morale". "The new office of real estate operations and facilities and services at the University of Toronto has been awarded the University's first LEED gold certification by the Canadian Green Building Council. The office is located at 255 McCaul St. The space on the fourth floor of 255 McCaul sets a standard for office design by showcasing many innovative sustainable features: operable windows" "University of Toronto Scarborough inaugurated a new Instructional Centre on August 31st, 2011.The office wing has a 43,000-square-foot (4000- square-metre) unitized curtain wall system with panoramic vision glass and operable awning windows".
	A08 – Air Quality Monitoring and Awareness		
	A09 – Pollution Infiltration Management		
	A10 – Combustion Minimization		
	A11 – Source Separation		
	A12 – Air Filtration		
	A13 – Active VOC Control		
	A14 – Microbe and Mold Control	Document: https://ehs.utoronto.ca/wp-content/uploads/2015/10/Mould-Control-Program.pdf	University of Toronto Mould Control Program
WATER	W01 – Fundamental Water Quality		
	W02 – Water Contaminants		
	W03 – Legionella Control		
	W04 – Enhanced Water Quality		
	W05 – Water Quality Consistency		
	W06 – Drinking Water Promotion		
	W07 – Moisture Management		
	W08 - Handwashing	Article: https://www.utoronto.ca/news/how-wash-your-hands-u-t-startup-aims-solve-major-health-care-problem https://www.utsc.utoronto.ca/hwc/importance-handwashing-during-cold-and-flu-season	How to wash your hands: U of T start-up aims to solve major health-care problem Health and Wellness Centre – Importance of Handwashing During Cold and Flu Season
NOURISHMENT	N01 – Fruits and Vegetables	Article: https://ose.utsc.utoronto.ca/ose/story.php?id=2209 https://www.utsc.utoronto.ca/sustainability/good-food-box https://www.utsc.utoronto.ca/sustainability/farmers-market	"Crisp green lettuce, honeydew melons, red apples and potatoes are just a few of the local and sustainable treasures that may be found inside the Good Food Box, a new program aimed at promoting healthy eating and local food within the University of Toronto Scarborough (UTSC) campus community".

			UTSC Farmer's Market
	N02 – Nutritional Transparency	Webpage: https://fso.ueat.utoronto.ca/FSO/ServiceMenuReport/Today	Menu Nutritional Information
	N03 – Refined Ingredients		
	N04 – Food Advertising		
	N05 – Artificial Ingredients		
	N06 – Portion Sizes	Webpage: https://ueat.utoronto.ca/portioning/	Food Services: Portioning
	N07 – Nutrition Education	Webpage: https://ueat.utoronto.ca/the-student-kitchen/	The Student Kitchen
	N08 – Mindful Eating	Webpage: https://ueat.utoronto.ca/the-student-kitchen/smart-eating/	The Student Kitchen: Smart Eating
	N09 – Special Diets	Webpage: https://ueat.utoronto.ca/everythingfood/food-standards/	Vegan, vegetarian, Halal
	N10 – Food Preparation	Document: https://food-beverage.utoronto.ca/wp-content/uploads/2012/01/safefoodhandlingguidelines.pdf	Food Preparation and Protection
	N11 – Responsible Food Sourcing	Webpage: https://ueat.utoronto.ca/everythingfood/food-standards/local-food-standards-2/	"The University of Toronto Local Standards further require that foods labeled as 'local' have been sourced from farms that: have safe and fair working conditions for their workers. provide humane conditions for their livestock. protect wild-life habitat and biodiversity in their region. actively reduce energy consumption, and conserve soil and water during production and transportation of food. reduce or eliminate synthetic pesticides, fertilizers, hormones, antibiotics, and genetic engineering. The food service locations adopting the Local Food standards will ensure that they source food that follows the six criteria listed above. Where possible they will also make public the farms, cities, or regions where the food was produced".
	N12 – Food Production		
	N13 – Local Food Environment	Webpage: https://ueat.utoronto.ca/eating-sustainable-and-local-at-u-of-t/ https://ueat.utoronto.ca/everythingfood/food-standards/local-food-standards-2/	Local Food Plus (organization) "The Local Food Standards were created by Food Services to promote an increase in the volume of local ingredients and products sourced by campus food providers, raise awareness of local food options within the university community, support sustainable and responsible farming practices, and ensure that clearly defined labeling standards are maintained across the St. George campus". "Within University of Toronto, 'local' food is defined as any food and/or food product that is partially or completely grown, raised or produced in the province of Ontario".
LIGHT	L01 – Light Exposure and Education		
	L02 – Visual Lighting Design		
	L03 – Circadian Lighting Design		
	L04 – Glare Control		
	L05 – Enhanced Daylight Access		
	L06 – Visual Balance		
	L07 – Electric Light Quality		
	L08 – Occupant Control of Lighting Environments		
MOVEMENT	V01 – Active Buildings and Communities		
	V02 – Visual and Physical Ergonomics		
	V03 – Movement Network and Circulation		
	V04 – Active Commuter and Occupant Support		
	V05 – Site Planning		
	V06 – Physical Activity Opportunities	Webpages: https://ocw.utoronto.ca/movement-breaks/movement-resources/	Open UToronto
	V07 – Active Furnishings		
	V08 – Physical Activity Spaces and Equipment	Webpage: https://future.utoronto.ca/current-students/student-services-campus-life/athletics-recreation/	Fitness Centres
	V09 – Exterior Active Design		
	V10 – Enhanced Ergonomics		
	V11 – Physical Activity Promotion		
	V12 – Self-Monitoring		
	T01 – Thermal Performance		

THERMAL COMFORT	T02 – Enhanced Thermal Performance		
	T03 – Thermal Zoning		
	T04 – Individual Thermal Control		
	T05 – Radiant Thermal Comfort		
	T06 – Thermal Comfort Monitoring		
	T07 – Humidity Control	Webpage: https://www.utsc.utoronto.ca/facmgmt/environmental-control-instrumentation-services	Facilities Management
SOUND	S01 – Sound Mapping		
	S02 – Maximum Noise Levels		
	S03 – Sound Barriers		
	S04 – Sound Absorption		
	S05 – Sound Masking		
	S06 - β - Impact Noise Management		
MATERIALS	X01 – Fundamental Material Precautions	Webpage with Documentation: https://ehs.utoronto.ca/resources/policies-and-procedures/	Environmental Health & Safety Program – Policies, Procedures and Guidelines
	X02 – Hazardous Material Abatement		
	X03 – Outdoor Structures		
	X04 – Waste Management	Webpage: https://www.fs.utoronto.ca/building-services-trades/recycling-services/	Recycling with waste audit and waste management plan
	X05 – In-Place Management		
	X06 – Site Remediation		
	X07 – Pesticide Use		
	X08 – Hazardous Material Reduction	Webpage: https://www.utsc.utoronto.ca/ehs/hazardous-waste https://ehs.utoronto.ca/laboratory-hazardous-waste-management-and-disposal-manual/chemical-waste-disposal/	Chemical Waste Disposal Hazardous Material Disposal
	X09 – Cleaning Products and Protocol		
	X10 – Volatile Compound Reduction		
	X11 – Long-Term Emission Control		Low Carbon Action Plan
	X12 – Short-Term Emission Control		Low Carbon Action Plan
	X13 – Enhanced Material Precaution		
	X14 – Material Transparency		
MIND	M01 – Mental Health Promotion	Webpage: https://www.utoronto.ca/news/we-heard-call-change-task-force-student-mental-health-issues-report-and-recommendations Health and Wellness Center: https://studentlife.utoronto.ca/program/building-positive-mental-health/	"'We heard the call for change': Task force on student mental health issues report and recommendations" "Building Positive Mental Health workshops teach you various strategies to promote positive mental health during the COVID-19 pandemic. Participants will learn coping strategies, share experiences and insights, and learn about additional mental health workshops and resources".
	M02 – Access to Nature		
	M03 – Mental Health Support	Webpage (Health and Wellness/Student Life): https://studentlife.utoronto.ca/department/health-wellness/	
	M04 – Mental Health Education	Webpage (Health and Wellness/Student Life): https://studentlife.utoronto.ca/department/health-wellness/	
	M05 – Stress Support	Webpage (Health and Wellness/Student Life): https://studentlife.utoronto.ca/department/health-wellness/	
	M06 – Restorative Opportunities		
	M07 – Restorative Spaces		
	M08 – Restorative Programming		
	M09 – Enhanced Access to Nature		
	M10 – Focus Support	Webpage (Health and Wellness/Student Life): https://studentlife.utoronto.ca/department/health-wellness/	
	M11 – Sleep Support	Webpage (Health and Wellness/Student Life): https://studentlife.utoronto.ca/department/health-wellness/	
	M12 – Business Travel		
	M13 – Tobacco Prevention and Cessation	Webpage: https://md.utoronto.ca/student-resources-substance-use-disorders-addictions	Student resources on substance use disorders & addictions
	M14 – Substance Use Education and Services	Webpage: https://md.utoronto.ca/student-resources-substance-use-disorders-addictions	Student resources on substance use disorders & addictions
	M15 – Opioid Emergency Response Plan		

COMMUNITY	C01 – Health and Wellness Awareness	Webpage: https://studentlife.utoronto.ca/department/health-wellness/	Health and Wellness Center
	C02 – Integrative Design		
	C03 – Occupant Survey		
	C04 – Enhanced Occupant Survey		
	C05 – Health Services and Benefits	Webpage: https://studentlife.utoronto.ca/department/health-wellness/ https://www.utsu.ca/health/#:~:text=As%20a%20student%20at%20the,full%20time%20status%20and%20campus.	Health and Dental Plan Health and Wellness Center
	C06 – Health Promotion	Webpage: https://studentlife.utoronto.ca/department/health-wellness/	Health and Wellness Center
	C07 – Community Immunity		
	C08 – New Parent Support	Webpage: https://familycare.utoronto.ca/childcare/family-support-programs/	Family Support Programs
	C09 – New Mother Support	Webpage: https://familycare.utoronto.ca/childcare/family-support-programs/	Family Support Programs
	C10 – Family Support	Webpage: https://familycare.utoronto.ca/childcare/family-support-programs/	Family Support Programs
	C11 – Civic Engagement		
	C12 – Organizational Transparency		
	C13 – Accessibility and Universal Design		
	C14 – Bathroom Accommodations		
	C15 – Emergency Preparedness		
	C16 – Community Access and Engagement		
	C17 - β - Housing Equity		

Appendix D – Summary of Each WELLv2 Section

Air

This section ensures high levels of indoor air quality across a building's lifetime through diverse strategies that include:

1. source elimination or reduction
2. active and passive building design and operation strategies
3. human behavior interventions.

Technical solutions focus on eliminating individual sources of air pollution and through:

- Adequate design solutions
- Human behavior modification
- Adopting some features require installation of a specific treatment method or technology
- Regular maintenance of selected air treatment systems is critical to ensure their optimal operation and expand their "life expectancy"
- Building materials, furnishings, fabrics, cleaning products, personal care products and air fresheners can all emit volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCs) or other particulate matter (PM), into the indoor environment.
- Outdoor air pollution can also influence indoor exposure when pollutants diffuse indoors through building envelope openings, so there is a need to simultaneously address outdoor air quality.
- WELL recommends that professionals and building users must be engaged in this and ongoing implementation of adequate approaches. This is especially useful for the entire campus (policy) during the ongoing Covid-19 pandemic.

Water

This section ensures the quality, distribution and control of liquid water over a building's lifetime through diverse strategies that include:

1. Identifying which (if any) contaminants are of concern on the local scale.
2. Only then is it possible to design water treatment systems
3. Providing hydration for building users (must have at least at least one drinking water dispenser within the project boundary for drinking water, which will be sampled during performance testing)
4. Reduce health risks due to contaminated water and excessive moisture within buildings through better awareness and maintenance of water quality and management

As water is used in heating and cooling systems, irrigation, pools and baths and general appliances Technical solutions focus on providing high water quality standards and preventing water damage:

- address the availability and contaminant thresholds of drinking water
- targeting the management of water to avoid damage to building materials and environmental conditions

- if water from any source wets building materials that are not intended to come into contact with water, it sets up prime conditions for mold growth
- control Legionella in cooling systems and hot tubs
- building design and an operations team responsive to inspections and sensors can mitigate the risks from water in these other aspects of buildings

Nourishment

This section focuses on increasing access to healthier food and beverage choices, limiting access to highly processed foods and ingredients and designing environments that nudge individuals toward healthier choices that include:

1. Requires the availability of fruits and vegetables and nutritional transparency and encourages the creation of food environments where the healthiest choice is the easiest choice.
2. Environmental interventions include designated eating spaces that allow for social and mindful eating as well as food production and agriculture spaces that reconnect individuals to food and increase access to produce.

Technical solutions focus on :

- Food advertising and marketing policies to support healthy eating and help normalize minimally processed, nutrient-dense foods
- Organizational policies to improve the availability, accessibility and consumption of healthy food choices for everyone, including individuals with dietary restrictions and food allergies
- Increase nutritional knowledge and health literacy can complement existing environmental and policy interventions

Light

This section provides design guides to ensure comfortable lighting environment which positively impacts mood and productivity that:

1. Promotes exposure to natural light and aims to create lighting environments that are optimal for visual, mental and biological health.
2. Connecting to other themes by recognizing that reduced exposure to daylight has been linked to the onset of depression and impairment of cognitive function in individuals.

Technical solutions focus on:

- Design rooms with large, sun-facing windows reduce recovery time for patients suffering from severe depression and those recuperating after heart attacks, compared to similarly afflicted patients in rooms with windows facing buildings or other obstructions.
- Integrating daylight and electric light to create lighting strategies focused on human health, along with traditional requirements for visual acuity and comfort.

Movement

This section ensures promotes movement, physical activity and active living and discourages sedentary behaviors through environmental design strategies, programs and policies that include:

1. Provisions focused largely on personal factors and influencers of physical activity behavior.
2. Understand that our environment, including our sociocultural environment and communities, plays a significant role in active living and physical activity.
3. Scalable physical activity interventions such as incentives and structured programs.

Technical solutions focus on :

- Classroom-based interventions and community-scale interventions to fill gaps in our understanding for adolescents and older adults.
- Consider off-site spaces under joint-use agreements toward these requirements.
- Consulting the growing body of peer-reviewed literature, evidence-based design guidelines and more progressive standards, codes and best practices that support environmental design for physical activity and active living at a building and community scale.
- Focus on building- and community-scale design interventions that support physical activity and active living, there is a continued need for interventions that address long-term behavior change and maintenance.

Thermal

This section promotes human productivity and ensures a maximum level of thermal comfort among all building users across a building's lifetime through diverse strategies that include:

1. Correctly sized HVAC equipment is essential for optimal thermal comfort, improved HVAC system design, control meet range of individual thermal preferences.
2. Prevent thermal discomfort which is known to play a role in sick building syndrome symptoms.

Technical solutions focus on :

- Understanding the complexities involved in controlling the interaction between people and the buildings, not everyone will be equally comfortable under the same conditions
- A holistic approach to thermal comfort that can satisfy the individual preferences.
- In larger spaces such as open offices, it may be necessary to provide localized control to people who work in cubicles and other work areas.
- Provide building control apps allow people in commercial buildings to "vote" and to directly influence the operation of HVAC systems without use of thermostats or intervention by building operators.
- Personal thermal comfort devices should be use.

Sound

This section ensures the acoustical comfort across a building's lifetime through diverse strategies that include:

1. Bolster occupant health and well-being through the identification and mitigation of acoustical comfort parameters that shape occupant experiences in the built environment.
2. The planning and commissioning of an isolated and balanced HVAC system provides a firm baseline for the anticipated background noise level in a given enclosure.
3. A holistic approach to addressing the issue of acoustical comfort in the built environment is achievable.

Technical solutions focus on :

- Consistent background noise levels can be introduced into a space using a sound masking system, thus improving the signal-to-noise ratio in favor of acoustical privacy between occupants.
- Replacing areas of hard surfaces in a space with absorptive materials can reduce reflected sound energy and better facilitate acoustical privacy or, conversely, improve speech projection.
- Adding mass and glazing to partition elements, sealing gaps at connections and doors and providing airspace between enclosed spaces bolsters sound privacy and increases occupant comfort.
- The fortification of façade elements can ensure that exterior noise intrusion is subdued much to the benefit of occupant comfort, health and productivity.

Material

This section provides various strategies to ensure factors of wellbeing are met across many other WELL themes. To ensure this, strong provisions are placed as regards provisions to:

1. Reduce human exposure to hazardous building material ingredients through the restriction or elimination of compounds or products known to be toxic and the promotion of safer replacements.
2. Provide low-hazard cleaning products, the use of effective cleaning equipment, and design and furnishing guidelines that promote efficient cleaning practices also ensure good indoor air quality.
3. Ensure that legacy chemicals must also be safely handled through protocols and best practice guidelines for abatement, in-place management and protective action during repair, renovation or demolition.
4. Incorporate Integrated Pest Management (IPM) and use of low-hazard pesticides, along with signage and notice of application, further works to protect health. Soil, water and air contamination is also addressed through the testing and redevelopment of contaminated sites.

Technical solutions focus on :

- Third-party certification and labeling schemes serve to differentiate products with safer ingredients and help support consumer education and market demand for safer goods.

- Identification, evaluation and management of hazardous ingredients across building materials, cleaning products, waste, outdoor spaces and landscaping.
- Reduce risk of exposure, whether direct or through environmental contamination. Lastly, by enabling informed decision-making, WELL helps to bridge data gaps in the supply chain, supports innovation in green chemistry and advances market transformation.
- Remediation of such sites removes toxic hazards and can work to support environmentally responsible growth and prevent sprawl.

Mind

This section promotes mental health through policy, program and design strategies that seek to address the diverse factors that influence cognitive and emotional well-being that include:

1. Improving the cognitive and emotional health and well-being of those living, working, learning and spending time in WELL spaces.
2. If left unmanaged, mental health conditions – especially depression – can place an individual at risk for suicidal thoughts, attempted suicide and completed suicide. Suicide results in a tragic and preventable death.
3. Improvements to mental health literacy and efforts to reduce stigma; provision of healthy living and working conditions for all, including organizational improvements to promote positive work environments and provision of stress management programs; and strategies that address gaps in access to and use of care by supporting access to mental health, substance use and addiction services and treatment.
4. Improving opportunities for restoration through mindfulness programming, restorative spaces and support of optimal sleep.
5. Design strategies, such as access to indoor nature, as well as design that supports productivity and focus can help relieve workplace stress and anxiety, reduce absences and enhance overall perceived health status.

Technical solutions are determined by a range of socioeconomic, biological and environmental factors, such as work conditions, lifestyle and health behaviors and genetic components that influence chemicals in the brain and include:

- Reducing alcohol and drug use.
- Provide supports for depression and anxiety disorders.
- It is increasingly recognized that a complex relationship exists between the mind and the body and that this interplay can significantly impact health and well-being.
- Reduce states of chronic stress are associated with increased risk of numerous adverse health consequences.
- Supports for individuals with mental health conditions are at higher risk for engaging in adverse health behaviors, including tobacco and substance use, physical inactivity and poor diet.

Community

This section ensures the community's health and well-being across a building's lifetime through policies and programs that support healthy, equitable environments that include:

1. Workplace health promotion programs shown to improve job satisfaction, sense of well-being, self-esteem and overall health status, while also reducing health risks. These programs result in organizational benefits that include lower healthcare costs and absenteeism as well as improved productivity, recruitment, retention, culture and employee morale.
2. Foster civic engagement can help increase employee attraction and retention while enabling individuals to make positive contributions in their local community.
3. Supporting working caregivers through offerings like flexible scheduling, child- and eldercare support, and spaces for breastfeeding can provide numerous benefits.
4. Providing accessible spaces that are not just compliant with code but also incorporate universal design principles that support diverse ability and mobility and encourage people of all backgrounds to use a space.

Technical solutions focus on supporting the health and well-being of the community in a building:

- Access to health services, protection and promotion of health and equitable spaces and employment conditions.
- Immunization programs can minimize health costs and productivity loss caused by seasonal influenza and other vaccine-preventable diseases.
- Paid parental leave is associated with higher rates of breastfeeding, long-term achievement for children, reduced infant mortality and maternal postpartum depression and decreased risk of low birthweight infants.
- Health risk assessments combined with education can lower medical claims costs, reduce absenteeism and enhance productivity.
- Support access to essential healthcare, workplace health promotion and accommodations for new parents while establishing an inclusive, integrated community through social equity, civic engagement and accessible design.
- Design approaches that address the physical determinants of health and well-being by making buildings inclusive, accessible and safe for all.

Innovation Optimizations

- Innovation features pave the way for projects to develop unique strategies for creating healthy environments.
- Innovation features address a novel concept or strategy not already included in WELL or achieve results above and beyond the existing requirements in a WELL Feature. Projects may receive up to 10 points in Innovation.
- Projects should use Feature I01: Innovate WELL to submit innovation proposals. This feature provides guidelines on the requirements that must be met in order for an innovation proposal to be considered for approval. Other Innovation features represent strategies pre-approved by IWBI.

Appendix E - Navigating the Technical Recommendation Through Applied Examples

There is a heavy focus on recent wellbeing initiatives (ex. suicide prevention provisions, that the University community has expressed recent desire (and mobilization) in seeing improvements (such as suicide prevention provisions by specifically increasing access to services and professional care (for students and employees by ensuring a number of strategies such as increasing health care supports and access to professionals, reducing wait times), all of which WELLv2 counts towards preconditional and optimization points. As WELL keeps evolving, the location and number of provisions with direct connection to this topic continue to change. Expect new information regarding suicide prevention to be present in newer WELL updates.

The next wellbeing frame is Covid-19 and what that holds for the future, and how one can plan further ahead, using a number of WELLv2 provisions which account for this upcoming year's new 'business as usual'. Already, WELLv2 will be useful in justifying short- and long-term planning strategies as they ultimately provide multiple solution-oriented recommendations and the targets that must be achieved. These targets (in the recommendations (Appendix H) change (subtly, and also drastically, depending on the context and target) every business quarter (the standard is constantly evolving, as scientific and social understanding advances. WELLv2 is like a ratchet that is tightening the building's cultural and behavioural commitments to wellbeing (and sustainability, as there is consideration towards GHG reducing measures in WELLv2)).

So (theoretically) by the time this project moves to the next phase, the WELLv2 technical infrastructure will be subtly and noticeably different. To account for this (practically), the report and recommendations track the source info (in the attached appendix, as they formulate the recommendations) and where and how to change the technical details when a change is made to the WELLv2 standard. The alternative is to hire a WELL accredited professional, at cost (Recommendation 133).

To explain the context of the recommendations, we've provided a comprehensive search of media articles, University announcements (strategy/speeches/addresses) and resulting reports that catalog "wellbeing at UofT" over the last decade (ex. *Final Report of the Presidential & Provostial Task Force on Student Mental Health - December, 2019; further resources) and many more, on various wellbeing 'issues' that can be traced into aspects of the campus design standard. A good example of this is 'washrooms' and how recent (2015-2017) wellbeing initiatives regarding gender identity equity resulted in creating all-inclusive washrooms (and the technical language is changing, the signs to use, the details, etc WERE in recommendations but the standard changed as the project was being conducted and WELLv2 removed the provision about bathrooms.* The second large part to consider is the sustainability context and related UofT documentation, which help to position the intersection of recommendations and the format they are provided in (that address both contexts, dynamically).

Recommendations are organized by WELL theme areas, so it is very easy to find the details to logically seek compliance with the preconditions and then optimizations (step by step). One could just decide to take the substance of the recommendations in some of the Ten (actually

11) WELLv2 areas and then just forget about the other themes that are "not worth the effort". However, the purpose of WELL is to provide flexibility for planners, and from our analysis, there is already much overlap in addressing **solutions** to the contexts that are emerging as crucial to wellbeing (and play a role in overall sustainability).

WELL therefore provides practical solutions that address issues and barriers within the nuances of UofT Campus. Sustainability and wellbeing initiatives, presented in, for example the course ENV1103-Campus as a Living Lab (see website for solution oriented projects) provide examples that WELLv2's technical guides can support or discredit when it comes to considering the adoption of a project or the funding of an initiative. Is it aligned with WELL?

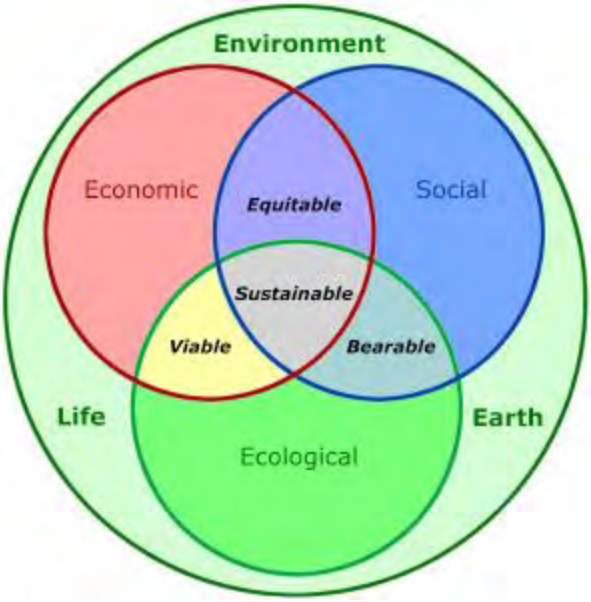
Further research can be conducted on previous year's projects, which go towards developing the narrative at UofT's sustainability and wellbeing status (2) current projects (ENV1103, for example) and, (3) syllabi from sustainability related courses in the MScSM and CSES, OISE (ex, food as a pedagogy for wellbeing, sustainability and community resilience) and other faculty that overlap with WELLv2, other building standards and the global picture of sustainability, especially for those looking to make UofT a leader in some aspect of Sustainability.

There is space for the UofT design standard to incorporate nearly everything from the WELLv2 standard (meeting preconditions and optimizations), and then apply each UofT building conditions to further refine the recommendations we are putting forward (practically, guided by an oversight committee (already multiple committees exist)) that could reference this document to justify their solutions to specific inquiries around wellbeing and: culture; religion; diet; medical requirements, etc.

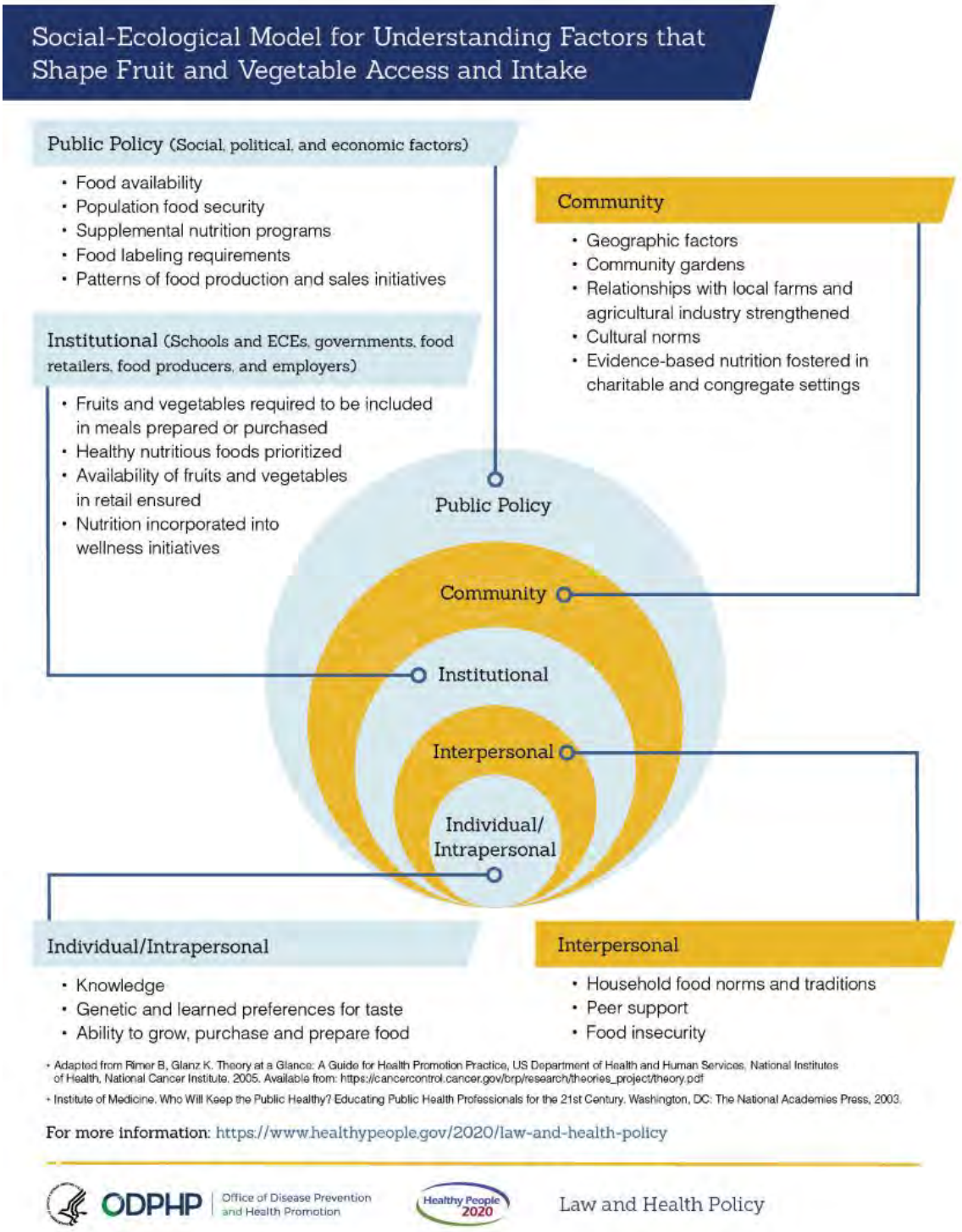
In another direction, the analysis provides justification to dismiss ideas that are brought to the attention of campus planners but are fantasy, not grounded in the foundational evidence - rather supported by members of the student, faculty or employee communities, or charismatically presented, but have little substance when it comes to achieiving targets. An occupant can bring forth a concern and topic of interest that pass the sniff test, but are not realistic, well tested or properly understood. WELL v2 provides that standard to support good ideas and stop the bad ones.

As wellbeing continues to gain traction as a key driver of sustainability (and environmental health), the following diagram can help position the directions that each of the

WELL theme areas, features and proposed solutions primarily address through the dynamic solutions offered in each recommendation:



For example, we identified a gap relating to access to nutrition on campus, specifically regarding fruit and vegetables (despite the many food halls and services and business providers that do provide standards for their kitchens and dining spaces, food preparation procedures and equipment standards, testing, training, visual and nutrition guides etc.). Below is a diagram of the complexity that must be understood to approach the adoption of recommendations (R39 and R40) that specifically address nutrition and landscaping solutions that increases access to nature, and therefore overall wellbeing (Social-Ecological Model Graphic (link):



It is recommended that a task force of various campus planners, administrators and previously involved UofT community members who have worked on wellbeing initiatives review this report and adjust any campus policy that can support wellbeing (using their practical experience). The double edge of experience is that it can create resistance to the 'new' by safe guarding outdated practices and behaviours (and administrative structures) that prevent overall

wellbeing (again addressed by ongoing survey provisions in WELLv2, across themes, the location of these recommendations in WELLv2Q4 has changed a number of these, to consolidate into education awareness provisions as regards the theme (ex: Air education; Water education; Nourishment education; Lighting education; Movement education, etc.).

The current UofT design standard and the WELLv1 standard were shockingly similar in structure (as if written by the same committee, informed by convergent literature. Further analysis (in this direction) is outside the constraints of this project's scope however, one can think of WELLv2 as a more complex version of UofT's design guide (simply because WELLv2 has been reviewed in 2020 while some UofT documents (despite having recent amendments) are at least one revision cycle old, which according to 2020's events, makes everything out of date.

136 Recommendations that account for the needs of all planers to be able to track all the connected documents and technical requirements, measurements, compliance, best practices, etc., in either wellbeing or sustainability contexts, or a fusion that the recommendations fit into, and then go into new, innovative areas of wellbeing, initiated (underpinned, grounded) by the planning provisions, creating a space for educating about, and creating a culture of sustained, sustainable wellbeing - thereby answering some of the questions raised by the media outcries and the 2019 *Final Report of the Presidential & Provostial Task Force on Student Mental Health (amongst countless other documents that inform our recommendations).*

The summary charts (presented above), that connects to all 22 appendices (technical comparisons) are organized so that any planner at UofT can find theme specific recommendations or extend the research that we have organized for a given topic of importance. Seeing that Covid-19 will be with us for at least a few more semesters, we provide resources that explore covid-19 related supports (outlined by WELLv2). This section has been relegated to a sub appendix due to space.

Basically, every building is different, so the WELL standards ensures that planners can employ a variety of fine-tuning options to increase wellbeing within their context. Of course, to be certified (or adopt the standard officially) you would need to achieve points, comply with reporting details and so forth (that we do not go into extensive detail, but would be an immediate follow up, in conjunction with re-organizing the recommendations for the WELLv2 Quarter 1, 2021 - Technical updates. So we provide a final clean version, and a working folder that traces all the dynamic information regarding the question, "Does UofT meet WELLv2's design standard?" and, "Can UofT include the recommendations (with a little more elbow grease) into the design standards that already exist, and cover many, many other areas, unique to UofT (St. George) in a manner that expands wellbeing provisions?

The WELL standard changes Quarterly, so built into the project is a nested analysis for planners to follow from the 'wellbeing' recommendation to the variety of solutions proposed, and summarized in the report. More so than anything this project offers a grounds for justification (financially, operationally, organizationally, etc.) to consider research, short or long term in some of the areas described above, or to the emerging needs of any of the communities (of practice) that operate at the intersection of sustainability and wellbeing.

Overall, to provide a summary figure of UofT's compliance with WELLv2 for adoption, (these numbers change, and these provisions are far more complex than simply assigning the following), The UofT design standard meets 100% overlap with the current 23 WELLv2 Preconditions. It is impossible to assign a percentage figure to the current WELLv2 Optimizations. It would have been nice to provide exact details, but a new WELLv2 standard came out while this project was being conducted. The new standard updates across themes, making a technical comparison in the time frame too challenging to complete. Only preconditions were fully analyzed.

WELL provides environmentally informed solutions (and adaptability), deeply conscious of the various nuances of sustainability informed building practices, life-cycles (to a lesser extent) and communities, which all have a role to play in the contemporary University of Toronto context.

To answer the ultimate question of adoption of the standard, and then of the overall alignment (and extensions) that the campus must consider (given its unique 'occupants' who themselves create many unique communities of practice in the spaces on campus, which the UofT policy is of course cognizant and responsive towards), WELLv2 recommends that a number of 'campus occupants' be appointed to wellbeing roles, which has already been addressed (summarized above). To contribute meaningfully to the wellbeing narrative will require the continued incorporation of people on campus who can speak to topics like sustainability, mental health, suicide on campus, technical design details (architecture, energy, IT professionals, etc.), covid-19 response, urban agriculture and more, WELL strongly advocates for strengthening ties with local community to further explore the edges of wellbeing.

Appendix F - WELLv2 Features

Theme	*Precondition*	*Optimization*
(A) Air	*(A) Air Precondition Appendix*	*(A) Air Optimization Appendix*
(W) Water	*(W) Water Precondition Appendix*	*(W) Water Optimization Appendix*
(N) Nutrition	*(N) Nutrition Precondition Appendix*	*(N) Nutrition Optimization Appendix*
(L) Light	*(L) Light Precondition Appendix*	*(L) Light Optimization Appendix*
(V) Movement	*(V) Movement Precondition Appendix*	*(V) Movement Optimization Appendix*
(T) Thermal	*(T) ThermalPrecondition Appendix*	*(T) ThermalOptimization Appendix*
(S) Sound	*(S) Sound Precondition Appendix*	*(S) Sound Optimization Appendix*
(X) Materials	*(X) Materials Precondition Appendix*	*(X) Materials Optimization Appendix*
(M) Mind	*(M) Mind Precondition Appendix*	*(M) Mind Optimization Appendix*
(C) Community	*(C) Community Precondition Appendix*	*(C) Community Optimization Appendix*
(I) Innovation	*No Preconditions*	*(I) Innovation Optimization Appendix*

Each cell links to a document that provides a comparison and organization chart across themes, space uses and objectives, unique to the campus. This requires far more expertise to conduct appropriately

Appendix G – Expanded WELLv2 Features

Theme	*Precondition* *Feature* *Part* *Location* *Criteria (see link)*	*Optimization* *Feature* *Part (Point)* *Location* *Criteria (see link)*
(A) Air	*(A) Air Precondition Appendix* *1. Fundamental Air Quality* *1. Meet Thresholds for Particulate Matter* *2. Meet Thresholds for Organic Gases* *3. Meet Thresholds for Inorganic Gases* *4. Meet Radon Threshold* *5. Monitor Fundamental Air Parameters* *02. Smoke-Free Environment* *1. Prohibit Indoor Smoking* *2. Prohibit Outdoor Smoking* *03. Ventilation Effectiveness* *1. Ensure Adequate Ventilation* *2. Conduct System Balancing* *04. Construction Pollution Management* *1. Mitigate Construction Pollution*	*(A) Air Optimization Appendix (18)* *05. Enhanced Air Quality* *1. Meet Enhanced Thresholds for Particulate Matter (2)* *2. Meet Enhanced Thresholds for Organic Gases (1)* *3. Meet Enhanced Thresholds for Inorganic Gases (1)* *06. Enhanced Ventilation* *1. Increase Outdoor Air Supply (3)* *2. Implement Demand-Controlled Ventilation (3)* *3. Implement Displacement Ventilation (1)* *4. Implement Advanced Air Distribution (3)* *07. Operable Windows* *1. Provide Operable Windows (1)* *2. Manage Window Use (1)* *3. Apply Universal Design to Windows (1)* *08. Air Quality Monitoring and Awareness* *1. Implement Indoor Air Monitors (1)* *2. Promote Air Quality Awareness (1)* *09. Pollution Infiltration Management* *1. Design Healthy Envelope and Entryways (1)* *10. Combustion Minimization* *1. Manage Combustion (1)* *11. Source Separation* *1. Manage Pollution and Exhaust (1)* *12. Air Filtration* *1. Implement Particle Filtration (1)* *13. Active VOC Control* *1. Implement Carbon Filtration (1)* *14. Microbe and Mold Control* *1. Implement Ultraviolet Air Treatment (1)* *2. Manage Condensation and Mold (1)*
(W) Water	*(W) Water Precondition Appendix* *01. Fundamental Water Quality* *1. Meet Sediment Thresholds* *2. Meet Microorganisms Thresholds* *3. Monitor Fundamental Water Parameters* *02. Water Contaminants* *1. Meet Dissolved Metal Thresholds* *2. Meet Organic Pollutant Thresholds* *3. Meet Disinfectant Byproducts Thresholds*	*(W) Water Optimization Appendix (10* *04. Enhanced Water Quality* *1. Meet Drinking Water Taste Properties (1)* *05. Water Quality Consistency* *1. Test and Display Water Quality (1)* *2. Filter Drinking Water (1)* *06. Drinking Water Promotion* *1. Ensure Drinking Water Access (1)* *07. Moisture Management* *1. Manage Exterior Liquid Water (1)* *2. Isolate Moisture-sensitive Materials (1)* *3. Manage Interior Liquid Water (1)* *08. Handwashing* *1. Provide Adequate Sink (1)*

	4. Meet Herbicide and Pesticide Thresholds *5. Meet Fertilizer Thresholds* *6. Meet Public Water Additive Thresholds* *7. Monitor Water Contaminant Parameters* *03. Legionella Control* *1. Implement Legionella Management Plan*	*2. Provide Handwashing Support (1)* *09B. Onsite Non-Potable Water (1)* *1. Implement Safety Plan for Non-Potable Water Capture and Reuse (1)*
(N) Nutrition	*(N) Nutrition Precondition Appendix* *01. Fruits and Vegetables* *1. Ensure Fruit and Vegetable Availability* *2. Promote Fruit and Vegetable Visibility* *02. Nutritional Transparency* *1. Provide Nutritional Information* *2. Implement Ingredient Labeling* *3. Implement Refined Ingredient Labeling*	*(N) Nutrition Optimization Appendix (17)* *03. Refined Ingredients* *1. Limit Total Sugars (1)* *2. Promote Whole Grains (1)* *3. Manage Oils (1)* *04. Food Advertising* *1. Promote Healthy Nutritional Messaging (1)* *2. Implement Healthy Menu Design (1)* *05. Artificial Ingredients* *1. Restrict Artificial Ingredients (1)* *06. Portion Sizes* *1. Promote Healthy Portions (1)* *07. Nutrition Education* *1. Provide Nutrition Education (1)* *08. Mindful Eating* *1. Include Designated Eating Space (1)* *2. Provide Daily Meal Breaks (1)* *09. Special Diets* *1. Manage Allergies and Alternatives (1)* *2. Implement Enhanced Ingredient Labeling (1)* *10. Food Preparation* *1. Provide Meal Support (1)* *11. Responsible Food Sourcing* *1. Implement Responsible Sourcing (1)* *12. Food Production* *1. Provide Gardening Space (1)* *2. Provide Planting Support (1)* *13. Local Food Environment* *1. Ensure Food Access (1)* *14. Red and Processed Meat* *1. Part not updated*
(L) Light	*(L) Light Precondition Appendix* *01. Light Exposure and Education* *1. Ensure Indoor Light Exposure* *2. Promote Lighting Education* *02. Visual Lighting Design* *1. Light Levels for Visual Acuity*	*(L) Light Optimization Appendix (14)* *03. Circadian Lighting Design* *1. Lighting for the Circadian System (3)* *04. Glare Control* *1. Control Solar Glare (2)* *2. Manage Glare from Electric Lighting (2)* *05. Enhanced Daylight Access* *1. Implement Enhanced Daylight Plan (1)* *2. Implement Enhanced Daylight Simulation (2)* *3. Ensure Views (1)* *06. Visual Balance* *1. Manage Brightness (1)*

		07. Electric Light Quality *1. Ensure Color Rendering Quality (1)* *2. Manage Flicker* *08. Occupant Control of Lighting Environments* *1. Enhance Occupant Controllability (1)* *2. Provide Supplemental Lighting (1)*
(V) Movement	*(V) Movement Precondition Appendix* *01. Active Buildings and Communities* *1. Design Active Buildings and Communities* *02. Visual and Physical Ergonomics* *1. Support Visual Ergonomics* *2. Ensure Desk Height Flexibility* *3. Ensure Seat Flexibility* *4. Provide Standing Support* *5. Provide Ergonomics Education*	*(V) Movement Optimization Appendix (20)* *03. Movement Network and Circulation* *1. Design Aesthetic Circulation Networks (1)* *2. Integrate Point-of-Decision Signage (1)* *3. Promote Visible Stairs (1)* *04. Active Commuter and Occupant Support* *1. Provide Bicycle Storage (2)* *2. Provide Facilities for Active Occupants (2)* *05. Site Planning and Selection* *1. Select Sites with Diverse Uses (2)* *2. Select Sites with Access to Mass Transit (2)* *3. Select Sites with Pedestrian Friendly Streets (2)* *4. Select Sites with Bike Friendly Streets (2)* *06. Physical Activity Opportunities* *1. Implement Activity Programs for Employees (2)* *2. Implement Activity Programs for Students (2)* *07. Active Furnishings* *1. Provide Active Workstations (2)* *08. Physical Activity Spaces and Equipment* *1. Provide Dedicated Activity Spaces (1)* *2. Provide Physical Activity Equipment (1)* *3. Provide Off-Site Activity Spaces (1)* *09. Exterior Active Design* *1. Integrate Active Façades (1)* *2. Provide On-Site Pedestrian Destinations (1)* *10. Enhanced Ergonomics* *1. Utilize Ergonomic Consultation (1)* *11. Physical Activity Promotion* *1. Promote Physical Activity (1)* *2. Promote Participation Awareness (1)* *12. Self-Monitoring* *1. Provide Self-Monitoring Tools (1)*
(T) Thermal	*(T) ThermalPrecondition Appendix* *01. Thermal Performance* *1. Support Thermal Environment* *2. Monitor Thermal Parameters*	*(T) ThermalOptimization Appendix (12)* *02. Enhanced Thermal Performance* *1. Enhance Thermal Environment (1)* *2. Achieve Thermal Comfort (3)* *03. Thermal Zoning* *1. Ensure Thermostat Control (2)* *2. Promote Free Address (1)* *04. Individual Thermal Control* *1. Ensure Personal Thermal Comfort (3)* *2. Facilitate Thermal Adaptation (1)* *05. Radiant Thermal Comfort*

		1. Implement Radiant Systems (1) *2. Implement Dedicated Outdoor Air Systems (1)* *06. Thermal Comfort Monitoring* *1. Monitor Thermal Environment (1)* *07. Humidity Control* *1. Manage Relative Humidity (1)* *T08 B Enhanced Operable Windows* *1. Enhance Operable Windows* *T09 B Outdoor Thermal Comfort* *1. Manage Outdoor Heat* *2. Avoid Excessive Wind* *3. Support Outdoor Nature Access*
(S) Sound	*(S) Sound Precondition Appendix* *01. Sound Mapping* *1. Manage Background Noise Level* *2. Manage Acoustical Privacy* *3. Label Acoustic Zones*	*(S) Sound Optimization Appendix (13)* *02. Maximum Noise Levels* *1. Limit Background Noise Levels (3)* *03. Sound Barriers* *1. Ensure Adequate Wall Construction (2)* *2. Ensure Proper Door Specifications (1)* *04. Sound Absorption* *1. Meet Thresholds for Reverberation Time (1)* *2. Implement Sound Reducing Ceilings (1)* *3. Implement Sound Reducing Vertical Surfaces (1)* *05. Sound Masking* *1. Implement Sound Masking (2)* *06B. Impact Noise Management* *1. Specify Noise Reducing Flooring (1)* *2. Meet Thresholds for Impact Noise Rating (2)*
(X) Materials	*(X) Materials Precondition Appendix* *01. Fundamental Material Precautions* *1. Restrict Asbestos* *2. Limit Mercury* *3. Restrict Lead* *02. Hazardous Material Abatement* *1. Manage Asbestos Hazards* *2. Manage Lead Hazards* *3. Manage Polychlorinated Biphenyl (PCB) Hazards* *03. Outdoor Structures* *1. Ensure Acceptable Structures* *2. Manage Exterior Paint and Soil*	*(X) Materials Optimization Appendix (22)* *04. Waste Management* *1. Manage Hazardous Waste (1)* *05. In-Place Management* *1. Manage Hazardous Materials (2)* *06. Site Remediation* *1. Implement Site Assessment and Cleanup (2)* *07. Pesticide Use* *1. Manage Pesticides (1)* *08. Hazardous Material Reduction* *1. Limit Hazardous Materials (1)* *09. Cleaning Products and Protocol* *1. Ensure Acceptable Cleaning Ingredients (1)* *2. Implement Acceptable Cleaning Practices (1)* *10. Volatile Compound Reduction* *1. Manage Volatile Organic Compounds (2)* *2. Manage Semi-Volatile Organic Compounds (SVOCs) (1)* *3. Purchase Compliant Products (1)* *11. Long-Term Emission Control*

		1. Manage Furniture and Furnishings Emissions (2) *2. Manage Flooring and Insulation Emissions (1)* *12. Short-Term Emission Control* *1. Manage Product Emissions: Adhesives, Sealants, Paints and Coatings (3)* *2. Manage Product Content: Adhesives, Sealants, Paints and Coatings (2)* *13. Enhanced Material Precaution* *1. Select Optimized Materials (2)* *14. Material Transparency* *1. Promote Ingredient Disclosure (2)* *X15 B Contact Reduction* *1. Reduce Respiratory Particle Exposure* *2. Address Surface Hand Touch*
(M) Mind	*(M) Mind Precondition Appendix* *01. Mental Health Promotion* *1. Commit to Mental Health Promotion* *2. Promote Mental Health Literacy* *02. Access to Nature* *1. Provide Access to Nature*	*(M) Mind Optimization Appendix (24)* *03. Mental Health Support* *1. Provide Mental Health Screening (1)* *2. Provide Mental Health Coverage (1)* *3. Provide Workplace Support (1)* *4. Support Mental Health Recovery (1)* *04. Mental Health Education* *1. Offer Mental Health Education (1)* *2. Offer Mental Health Education for Managers (1)* *05. Stress Support* *1. Develop Stress Management Plan (1)* *2. Support Stress Management Programs (1)* *06. Restorative Opportunities* *1. Provide Micro- and Macro-Breaks (1)* *07. Restorative Spaces* *1. Provide Restorative Indoor Spaces (1)* *2. Provide Restorative Outdoor Spaces (1)* *08. Restorative Programming* *1. Provide Restorative Programming (1)* *09. Enhanced Access to Nature* *1. Provide Enhanced Access to Nature (1)* *10. Focus Support* *1. Assess Work Environment (1)* *2. Integrate Space Management (1)* *11. Sleep Support* *1. Provide Workplace Sleep Support (1)* *2. Provide Non-Workplace Sleep Support (1)* *12. Business Travel* *1. Provide Business Travel Support (1)* *13. Tobacco Prevention and Cessation* *1. Promote Tobacco Prevention (1)* *2. Support Tobacco Cessation (2)* *14. Substance Use Education and Services* *1. Promote Substance Abuse Prevention and Education (1)* *2. Provide Access to Substance Use Services (2)* *15. Opioid Emergency Response Plan*

		1. Provide Opioid Emergency Response Kits and Training (3)
(C) Community	*(C) Community Precondition Appendix* *01. Health and Wellness Awareness* *1. Provide WELL Feature Guide* *2. Promote Health and Wellness Education* *02. Integrative Design* *1. Facilitate Stakeholder Charrette* *2. Integrate Beauty and Design* *3. Promote Health-Oriented Mission* *4. Facilitate Stakeholder Orientation* *03. Occupant Survey* *1. Select Project Survey* *2. Administer Survey and Report Results*	*(C) Community Optimization Appendix (33)* *04. Enhanced Occupant Survey* *1. Select Enhanced Survey (1)* *2. Administer Pre-Occupancy Survey and Report Results (1)* *3. Monitor Survey Responses (1)* *4. Facilitate Interviews and Focus Groups (1)* *05. Health Services and Benefits* *1. Promote Health Benefits (2)* *2. Offer On-Demand Health Services (1)* *06. Health Promotion* *1. Promote Culture of Health (2)* *2. Offer Health Risk Assessments (1)* *07. Community Immunity* *1. Promote Seasonal Flu Prevention (1)* *2. Implement Immunization Schedule (1)* *08. New Parent Support* *1. Offer New Parent Leave (3)* *2. Promote Workplace Support (1)* *09. New Mother Support* *1. Offer Workplace Breastfeeding Support (1)* *2. Design Lactation Room (2)* *3. Promote Breastfeeding Education and Support (1)* *10. Family Support* *1. Offer Childcare Support (1)* *2. Offer Eldercare Support (1)* *3. Offer Family Leave (1)* *4. Offer Bereavement Support (Protocol) (1)* *11. Civic Engagement* *1. Promote Civic Engagement (1)* *12. Organizational Transparency* *1. Promote Equity Program Participation (2)* *13. Accessibility and Universal Design* *1. Ensure Essential Accessibility (1)* *2. Integrate Universal Design (2)* *14. Bathroom Accommodations* *1. Provide Essential Accommodations (1)* *2. Provide Single-User Bathrooms (1)* *3. Provide Family Bathrooms (1)* *15. Emergency Preparedness* *1. Develop Emergency Preparedness Plan (1)* *2. Promote Emergency Resources (2)* *16. Community Access and Engagement* *1. Provide Community Space (1)* *17B. Health Equity* *1. Unit Allocation (2)* *C18 B Emergency Resilience and Recovery* *1. Promote Business Continuity* *2. Support Emergency Resilience* *3. Facilitate Healthy Re-Entry* *C19 B Responsible Labor Practices* *1. Disclose Labour Practices*

		2. Implement Responsible Labour Practices
(I) Innovation	*No Preconditions*	*(I) Innovation Optimization Appendix (14)* *Innovative WELL* *1. Proposal Innovations (10)* *WELL Accredited Professional (WELL AP)* *1. WELL AP (1)* *Educate WELL* *1. Offer WELL Educational Tours (1)* *Gateways to Wellness* *1. Complete Health and Wellness Program (1)* *Green Building Rating Systems* *1. Achieve Sustainable Building Certification (1)*

Appendix H – Recommendation Checklist for future projects
Recommendation Checklist Documents (WELLv2)

1. Final Precondition Recommendations (pdf) (document)
2. Final Optimization Recommendations (pdf) (document)

Further UofT Wellbeing and Sustainability Documents

- Additional UofT Context (pdf)

Appendix I

The recommendations are organized into formulaic headers as such:

R# (theme number [P or O] sub feature 1, sub feature 2, sub feature n)

Where:

- R stands for Recommendation
- # stands for the number in this report
- ( ) information from WELLv2
- theme stands for the different WELLv2 themes: Air(A), Water(W), Nourishment(N), Light(L), Movement(V), Sound(S), Materials(X), Mind(M) and Community(C) and Innovations(I)
- There are 2 subscripted terms
    i. The firs is P or O, meaning Precondition or Optimization
    ii. With their number respective to their parent feature

This is to account for the provisions that were changing as the project was being conducted, affecting the ultimate ability to propose full solutions. Nevertheless, WELLv2 provides solutions for designs, one example is provided below:

Within this formulaic approach are the technical requirements of the 136 recommendations that compare WELLv2 to Uof Design documents. One example is provided.

So for example, Recommendation 39 is denoted as the following:

R39 ($N12_{O1,2}$)

However, as we approached our recommendations, part 1 and part 2 of feature N12 are different in what they require (as many features are) so the recommendation needs to be split further into two:

R39 ($N12_{O1}$)

R40 ($N12_{O2}$)

We describe in further detail below:

Recommendation 39: Gardening 1 - Gardening Space

This feature supports the enhancement of access to nature, nourishment and wellbeing

R39 ($N12_{O1}$): Add WELLv2. Feature N.12. Food Production 1. Provide Gardening Space (1) 2. Provide Planting Support (1) to Doc 9: Pt. One Sec. 6: Landscaping

1. Provide Gardening Space (1)

For All Spaces except Dwelling Units

- *The project provides a permanent and accessible space for food production within 800 m [0.5 mi] of the project boundary that meets the*

following requirements: The space includes at least one of the following: Garden or greenhouse with food-bearing plants. Edible landscaping (e.g., fruit trees, herbs). Hydroponic or aeroponic farming system. The space is open to regular building occupants during regular building hours and foods grown are made available to regular building occupants. The space is at least 0.09 m2 [1 ft2] per eligible employee or 0.05 m2 [0.5 ft2] per student, whichever area is greater (up to a maximum of 70 m2 [750 ft2]). The area calculated is the actual growing area (vertical or horizontal) used for the production of food-bearing plants.

Dwelling Units

- *The project provides a permanent and accessible space for food production within 800 m [0.5 mi] of the project boundary that meets the following requirements: The space includes at least one of the following: Garden or greenhouse with food-bearing plants. Edible landscaping (e.g., fruit trees, herbs). Hydroponic or aeroponic farming system. The space is open to regular building occupants during regular building hours and foods grown are made available to regular building occupants. The space is at least 1.4 m2 [15 ft2] per unit (up to a maximum of 140 m2 [1,500 ft2]). The area calculated is the actual growing area (vertical or horizontal) used for the production of food-bearing plants.*

Recommendation 40: Gardening 2 - Planting Support

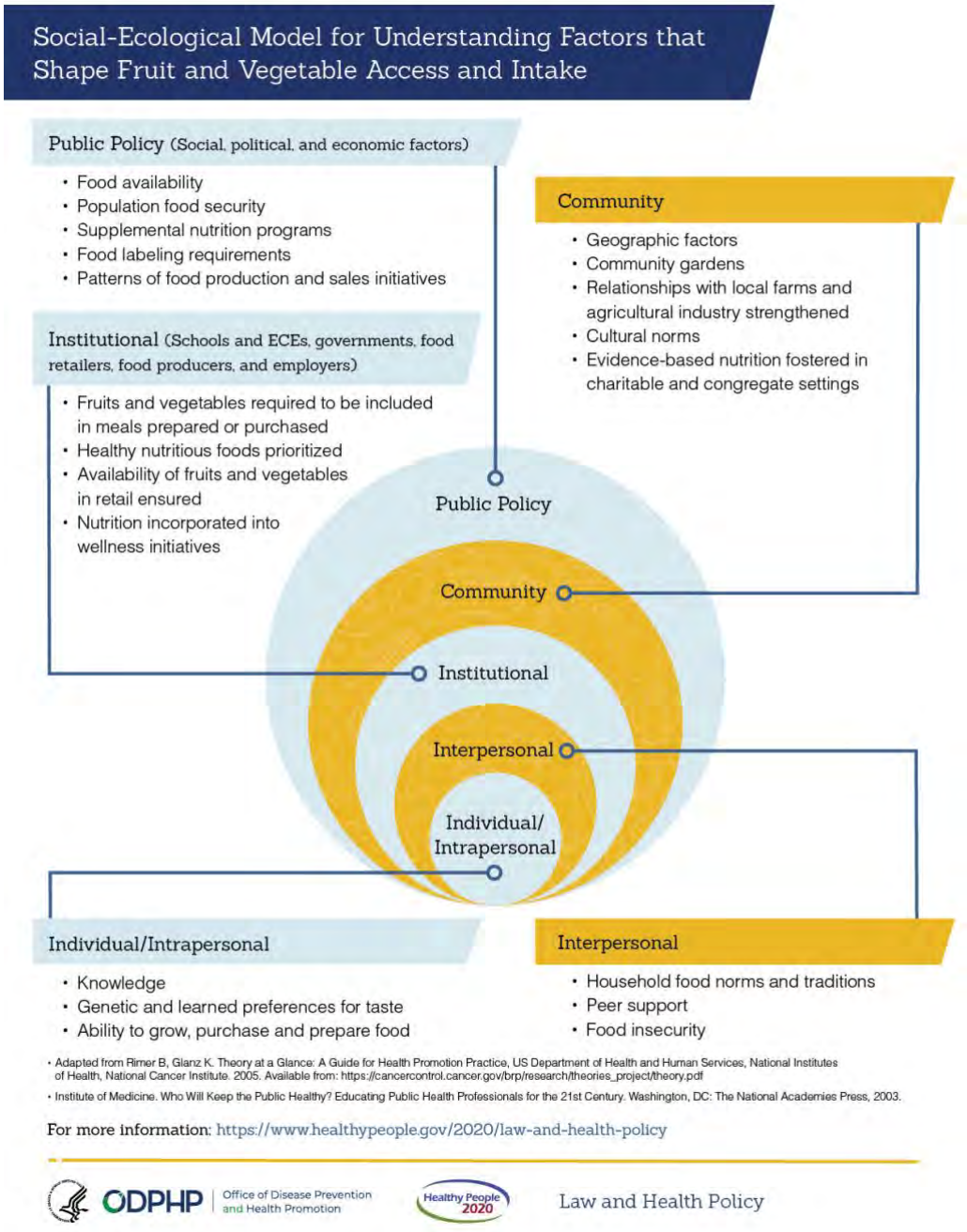
This feature supports the enhancement of access to nature, nourishment and wellbeing and builds on Recommendation 39

R40 (N12$_{O2}$): Add WELLv2. Feature N.12. Food Production 2. Provide Planting Support (1) to Doc 9: Pt. One Sec. 6: Landscaping

2. Provide Planting Support (1)

- *Gardening space(s) are managed and maintained for a minimum of three years.*
- *Training, programming or educational opportunities are made available to regular building occupants (e.g., gardening workshops, plant harvesting guidelines) and offered quarterly, at minimum.*
- *Projects provide planting supplies, including planting medium, watering system, lighting (interior spaces only), plants and gardening tools.*

To analyze these recommendations further, we placed the below information chart in Appendix E, to provide further context on how WELLv2 is designed to be dynamic and provide options for solutions to aspects noted below.



https://www.healthypeople.gov/2020/law-and-health-policy-social-ecological-model-graphic

https://v2.wellcertified.com/wellv2/en/light/feature/1