Schedule A: Services

17. Design for a Changing Climate

This addition to Services applies to all new construction, renovations and retrofits to existing facilities where climatic data is required to inform design. The intent is to adapt facilities to the changing climate so services provided by the facility continue uninterrupted in the face of more extreme weather events expected over the life cycle of the asset. This is consistent with public guidelines on climate adaptation and mitigation published by Engineers Canada[A].

The designer shall consider the changing climate in the design of building systems and associated components. In conjunction with the BC Building Code (BCBC), ASHRAE, or other industry accepted sources of climatic design data, the designer shall use data that reflects current and future climate over the service life of the equipment and building systems to inform design. When energy modelling is required to inform design, models shall use existing weather files (e.g. Canadian Weather for Energy Calculations file (CWEC)) as well as similar files adjusted[6] to reflect climate over the service life of the equipment and building system being modelled.

The designer shall use climate projections based on RCP 8.5[*], unless a risk assessment indicates a lower RCP is acceptable. The recommended sources for this information are:

1. Plan2Adapt https://www.pacificclimate.org/analysis-tools/plan2adapt
2. PCIC Climate Explorer https://pacificclimate.org/analysis-tools/pcic-climate-explorer
3. BC Climate Explorer http://www.bc-climate-explorer.org/
4. ClimateBC http://www.climatewna.com/ClimateBC_Map.aspx
5. Additional sources https://www.egbc.ca/Practice-Resources/Climate/Climate-Change-Information-Portal/Projected-Climate-Data
6. Source for adjusted CWEC files: https://www.pacificclimate.org/data/weather-files

The designer shall use climate projections, their professional judgement, and consultation with stakeholders to determine what changes are required in the equipment and/or building system design to account for the changing climate over the asset's entire life cycle. The design professional shall document, in a dedicated section of the design and specification package, the following:

1. changes in design temperature, precipitation, and other relevant climatic design variables anticipated over the project's life-cycle citing the source(s) of that data,
2. a narrative, including drawings if needed, to explain what adjustments were made to design criteria and how equipment and building system designs were modified to account for climate change, including all assumptions. If no modifications are required, this must be justified.

This information shall be provided for review and approval by Island Health, prior to completion of schematic design. If the project requires a formal business case, costs associated with designing for a changing climate must be included.

Sample Change to Climatic Design Data Value (for illustrative purposes only)
If BC Climate Explorer indicates that the climate variables most closely related to the climatic design data of interest in the BCBC are projected to increase 15% by 2050, then it would be reasonable for the design professional to increase the BCBC value by 15% when designing an asset in service to 2050.

Additional Resources:

A. Engineers Canada's public guideline: Principles of Climate Adaptation and Mitigation for Engineers https://engineerscanada.ca/publications/public-guideline-principles-of-climate-change-adaptation-for-professional-engineers
B. EGBC's Climate Change Information Portal https://www.egbc.ca/Practice-Resources/Climate/Climate-Change-Information-Portal
C. MoTI's Resilient Infrastructure Engineering Design Technical Circular T-04/19 https://www2.gov.bc.ca/assets/gov/driving-and-transportation/transportation-infrastructure/engineering-standards-and-guidelines/technical-circulars/2019/t04-19.pdf

For more information or assistance, contact the Pacific Climate Impacts Consortium at *https://www.pacificclimate.org/* to consult with climate specialists to ensure that interpretations of climatic information used in professional practice reasonably reflect the most current scientific consensus regarding the climate and/or weather.

[*RCP refers to Representative Concentration Pathway adopted by the IPCC for its Fifth Assessment Report (AR5) in 2014 and 8.5 refers to the level of positive radiative forcing in units of W/m^2 due to the additional GHG in the atmosphere. This reflects a "business-as-usual" trajectory without additional strategies to constrain emissions.]