Glossary of Key Terms

Understanding Energy Efficiency Basics in Residential Buildings

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- **Autoclaved Aerated Concrete (AAC):** A lightweight, precast building material that offers excellent thermal insulation properties.
- **BASIX (Building Sustainability Index):** A mandatory assessment tool for new homes in New South Wales, setting specific targets for energy and water efficiency.
- **Building Envelope:** The physical separator between the interior and exterior of a building, including the roof, walls, floors, windows, and doors, which controls heat, air, and moisture transfer.
- **Cross-Ventilation:** A passive cooling technique achieved by placing windows and openings on opposite sides of a room or building to allow natural airflow, flushing out warm air.
- **Deemed-to-Satisfy (DTS) Provisions:** Prescriptive solutions within the NCC that, if followed, guarantee that a building will meet minimum energy efficiency requirements.
- **Draught Proofing:** The process of sealing gaps and cracks in a building envelope to prevent unwanted air infiltration, reducing energy loss from heating and cooling.
- **Energy Efficiency:** Achieving the same or better performance (e.g., comfortable indoor temperature) while using the least amount of energy possible.
- **Glazing:** The material used for windows and doors, typically glass. High-performance glazing (e.g., double-glazed, Low-E glass) minimizes heat transfer.
- **Green Star:** A comprehensive rating system used in Australia to evaluate the broader sustainability factors of buildings, including energy use, materials, and water.

- **Heating and Cooling Loads:** The amount of energy required to add or remove heat from a building to maintain comfortable indoor temperatures.
- **Insulation:** Materials used in a building's envelope (roof, walls, floors) to reduce heat transfer, thereby minimizing energy required for heating and cooling.
- **Low-E Glass:** Glass with a microscopically thin, transparent coating that reflects heat, improving the thermal performance of windows by reducing unwanted heat gain or loss.
- **NABERS:** (National Australian Built Environment Rating System) An energy rating system used for apartments and multi-residential buildings, assessing operational energy performance.
- **NatHERS (Nationwide House Energy Rating Scheme):** The primary tool in Australia for assessing the thermal performance of residential buildings, assigning a star rating (0-10) based on simulated heating and cooling loads.
- **National Construction Code (NCC) 2022:** Australia's uniform set of technical provisions for the design and construction of buildings, including updated energy efficiency requirements in Volume Two, Section H6.
- **Passive Design Principles:** Design strategies that harness natural forces (sunlight, air movement, thermal mass) to regulate indoor environments and reduce reliance on mechanical heating and cooling systems.
- **Phase-Change Materials (PCMs):** Materials that store and release heat energy by changing their physical state (e.g., melting or freezing), helping to moderate indoor temperatures and improve energy efficiency.
- **Performance Solutions:** Alternative NCC compliance pathways that demonstrate a building achieves equivalent or superior energy performance to the DTS provisions, often requiring detailed analysis by qualified professionals.
- **Solar Orientation:** The strategic positioning of a building and its windows in relation to the sun's path to maximize beneficial solar heat gain in winter and minimize unwanted heat gain in summer.
- **Structural Insulated Panels (SIPs):** High-performance building panels consisting of an insulating foam core sandwiched between two structural facings, offering superior energy efficiency and airtightness.

- **Thermal Bridging:** Areas in a building envelope where heat can more easily transfer through a material, bypassing the insulation, often occurring at junctions or where materials with high thermal conductivity are used.
- **Thermal Mass:** Materials (e.g., concrete, brick, stone) that absorb, store, and release heat energy, helping to moderate indoor temperature fluctuations and reduce heating/cooling loads.
- **Weather Sealing:** The process of sealing gaps and cracks around doors, windows, and other openings to prevent air and moisture infiltration, similar to draught proofing.
- **Whole-of-Home Efficiency Factors (WHEF):** A new assessment framework in NCC 2022 that evaluates the total operational energy use of a home, including space conditioning, hot water, lighting, and on-site renewable energy systems.