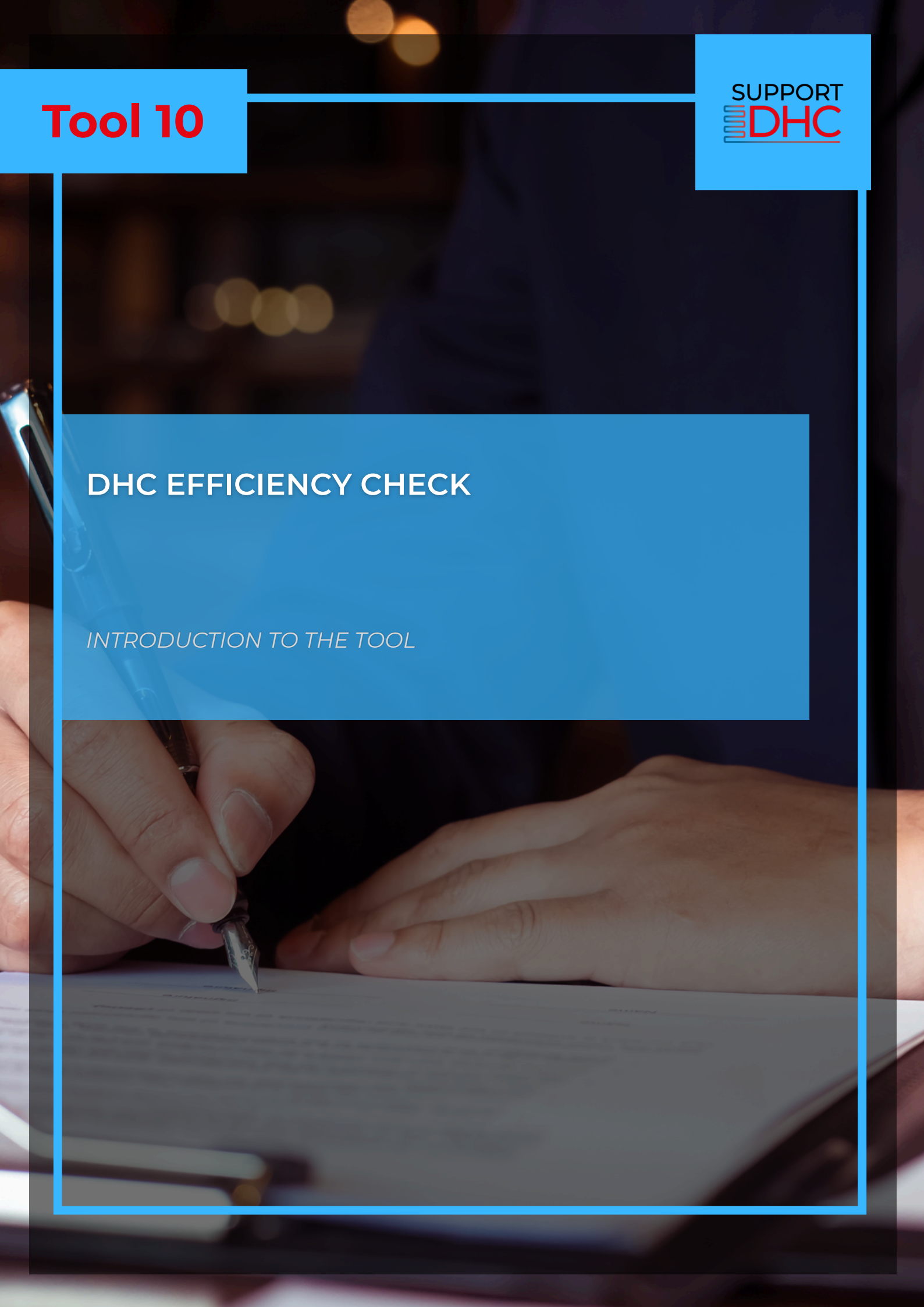
Tool 10

SUPPORT DHC

DHC EFFICIENCY CHECK

INTRODUCTION TO THE TOOL



Decarbonising existing district heating systems requires operators to address technological constraints, changing energy markets and increasingly stringent efficiency criteria. Article 26 of the recast Energy Efficiency Directive (EU) 2023/1791 sets out criteria for efficient district heating and cooling systems towards 2050. Translating these requirements into a practical assessment can be challenging, particularly when detailed operational data and modelling resources are limited. DHC Efficiency Check provides an accessible starting point for understanding a district heating system's performance and exploring its transition options.

A system's compliance depends on its technological configuration, how it operates and the criteria applicable at each regulatory milestone. The same assets can produce different results when dispatch priorities, energy prices or unit availability change. DHC Efficiency Check combines hourly heat demand reconstruction, simplified operational dispatch simulation and regulatory assessment to examine these relationships. Users define the production units, thermal storage and external heat supply, provide or reconstruct heat demand, and configure operational and economic assumptions. The simulation estimates the contribution of each heat source and storage to network supply. It then assesses thermal energy shares under Option 1 and the emission intensity of heat delivered to customers under Option 2, helping users identify satisfied pathways and potential compliance risks across regulatory milestones.

The tool originates from research activities at Politecnico di Milano within the European LIFE SupportDHC project, in synergy with Benedetta Mura's doctoral research on long-term decarbonisation planning and regulatory compliance assessment for existing district heating systems. Developed in the Department of Architecture, Built Environment and Construction Engineering (DABC), it builds on methodological research and collaboration with district heating operators. Its purpose is to connect European decarbonisation objectives with the practical questions operators face when considering changes to their systems and operating strategies.

DHC Efficiency Check runs locally through a browser dashboard and presents energy, environmental and preliminary economic results. Each simulation evaluates one configuration and its operating assumptions; users compare alternatives by changing inputs. It does not automatically generate an investment roadmap or replace detailed feasibility studies. Compliance results are preliminary assessments rather than official certification. In particular, use of Option 2 depends on national adoption and applicable accounting rules; the tool's implemented emission method is distinct from Appendix B of Recommendation (EU) 2024/2395.

The tool is intended primarily for district heating operators seeking to understand current performance, anticipate future requirements and explore decarbonisation alternatives before detailed investment decisions. It can also support technical consultants, energy planners, researchers, public authorities and other stakeholders who need a transparent basis for discussing system configurations, operational choices and the implications of evolving efficiency criteria.