Use Case: Energy Advisory AI Assistant in Rivne, Ukraine

Overall Objective

A GenAI Energy Advisory Assistant that helps residents, business owners, and city representatives convert building profiles (a short summary of the building's type, age, heating system, and energy use) into clear, cost-effective, and actionable energy efficiency recommendations, ultimately accelerating investment and strengthening energy resilience in line with Rivne's green transition agenda.

Rationale

Rivne is committed to introducing energy efficiency measures across the city as part of its wider energy modernisation and green transition agenda. The ongoing war has added urgency as power outages are frequent and energy costs are high, and the city now needs to move faster than normal timelines allow. While many residents, homeowner associations, representatives of multi-apartment buildings and small and medium enterprises (SMEs) want to cut energy costs and improve resilience to power outages, they don't know where to start. They're often unsure what information to gather, which measures are realistic, what they might cost, or what to bring to a first conversation with energy experts and local banks.

Currently, that first step is supported by individual consultations with the Energy Efficiency Office and the Office for Decarbonisation, which provide impartial advice within the municipal support framework. Pressure on these two offices is high, not least as the assessment process is manual and a lot of time goes into assessing the same starting questions repeatedly. This delay at the pre-project stage means fewer applications for financing and contractor support get prepared and approved, leaving more homes and businesses exposed to rising energy prices and power outages for longer.

Personas

- **Municipal Representative:** Olena, 57, has been advising homeowner associations on behalf of the city for 22 years, including before the establishment of the Energy Efficiency Office and the Office for Decarbonisation. She repeatedly helps users gather building

information, understand improvement options, explore funding and prepare their next steps. Much of this knowledge rests with individual specialists, making staff departures disruptive and requiring new colleagues to learn processes again.

Under wartime conditions, household heating tariffs remain substantially below the actual cost of providing heat, with the city compensating for the difference. This gives the municipality a direct financial interest in reducing energy consumption. Budget pressures also push the city to delay the start and bring forward the end of the heating season where possible. Olena would welcome a digital service that preserves shared knowledge, supports routine advisory tasks and helps users prepare for consultations, allowing specialists to focus on complex cases and project support.

- **Homeowner Association Chair:** Andriy, 52, chairs his apartment building's homeowner association. Although heating tariffs are currently held stable, co-owners anticipate future increases, while electricity, water and renovation costs have already risen. A shorter heating season leaves residents concerned about low indoor temperatures, dampness and health risks during periods without central heating. They want energy efficiency improvements that reduce consumption and help maintain comfortable indoor conditions. Andriy faces substantial differences in contractors' prices, service scope, and quality, and is unsure whom to approach or how to compare offers. Relevant measures may receive partial reimbursement through Ukraine's Energy Efficiency Fund, but applying and implementing a project involves complex procedures. He needs help gathering building data, comparing affordable improvement scenarios, and preparing a structured report for discussions with co-owners, municipal advisers, and contractors. He also needs to understand the steps and expert support required throughout the funding application and implementation process.
- **Small Business Owner:** Iryna, 41, runs a small bakery in Rivne. Energy costs and power outages affect her operating expenses and business continuity. Using a fuel-powered generator during outages increases production costs, prompting her to explore whether renewable energy, battery storage, or a combination of both could provide a more economical and reliable alternative. She is unsure which configuration suits her premises, what investment it requires, and how potential savings compare with her current electricity and generator costs. She needs clear preliminary scenarios, indicative costs and benefits, and information on relevant financing routes. A structured report would help her consult the Office for Decarbonisation, compare supplier proposals and prepare for financing discussions.

Key Features (Minimum Viable Product)

- **Guided Building Profile:** A simple questionnaire (building type, age, floors, heating system, consumption from bills) that builds a preliminary profile and flags missing information.
- **Measure Comparison:** Suggests typical modernisation measures relevant to the building profile, drawing primarily on applicable Ukrainian state standards and energy audits, supplemented by verified data from past projects to illustrate realistic options for similar buildings on verified data from past projects to show what is realistic for similar buildings, and lets the user compare a few basic scenarios.
- **Indicative Cost and Effect Logic:** Generates rough cost, effect, and payback estimates, clearly labelled as preliminary and not a substitute for an energy audit.
- **Exportable Report:** Produces a structured report (building profile, data completeness, selected measures, indicative cost/effect, financing notes, next steps) to bring to a consultation or contractor, available as a PDF or similar.

Optional Features

- **Assisted-Use Mode:** Authorised municipal and advisory staff can access building profiles with appropriate permissions and help users complete or verify information, including representatives of multi-apartment buildings and SMEs.
- **Financing Options Explainer:** Plain-language summaries of relevant support programmes and financing routes for multi-apartment buildings, business premises and municipal buildings.
- **SME/Business Building Track:** A parallel path for SMEs working with the Office for Decarbonisation, focused on preliminary assessment of their buildings and premises. It does not cover energy audits of industrial or production processes.
- **Municipal Building Track:** A dedicated path for municipal building managers and city specialists, using existing records of building characteristics and available consumption data to support preliminary assessments, scenario comparison and prioritisation of modernisation needs.

Target user

People planning or implementing energy efficiency measures, such as residents, representatives of multi-apartment buildings and business owners, as well as specialists from the Energy Efficiency Office and the Office for Decarbonisation.

Expected Benefits

- **Lower Barrier to the First Step:** Residents and SMEs arrive at a consultation already having a building profile and a sense of options.
- **Freed-Up Expert Capacity:** Office staff spend less time on repeat first-stage questions and more on complex cases and the preparation and review of actual applications.
- **Better-Prepared Requests:** Contractors, banks, and the municipality receive more structured, comparable requests.
- **Institutional Knowledge Retention and Service Continuity:** Advisory knowledge is captured in a shared tool, which reduces dependence on individual specialists and makes staff changes less disruptive.
- **Better-Informed Decisions on Comfort and Resilience:** Users can weigh indoor comfort and energy resilience alongside financial savings when choosing measures.
- **Citywide Energy Overview:** An overview of participating buildings and expressed demand, based on aggregated, anonymised building profiles. It could help the city understand where modernisation demand is concentrated and direct resources and support accordingly, with its coverage and representativeness made clear.

Indicative Data Types and Sources

- **Municipal building records, provided by the city:** Type, function, address, area, construction period, heating systems and other recorded technical characteristics, plus energy and utility consumption where accessible. Coverage varies by building and should not be assumed for all multi-apartment buildings or business premises. Most of the data is expected to be provided in XLSX or CSV, with other documents in their original formats.
- **Energy audits and previous project documentation, from city and partner records:** Audits, building assessments and documentation from previous energy

modernisation projects, including recommended measures, estimated costs and savings, and implementation details where recorded. These will inform the methodology and reference cases. Provided data formats include PDF, DOCX, and spreadsheets, subject to access permissions. Audit estimates must be distinguished from measured post-implementation results.

- **Applicable Ukrainian state standards and calculation methodologies, reference sources:** Provided as the primary methodological basis, alongside energy audits. Official public sources will be referenced, and access and permitted use should be checked for standards that are not freely available. Expert-approved formulas and assumptions should be translated into structured calculation tables.

- **User-provided building information, collected through the tool:** Questionnaire responses on building characteristics, envelope condition, heating and other systems, consumption, existing improvements, and user priorities. Users should also be able to flag indoor comfort concerns and missing information, and may add supporting bills or documents.

- **Typical measures, costs and effects, curated reference data:** An expert-validated catalogue of measures, applicability conditions, indicative cost ranges and calculation assumptions, drawing on standards, audits, previous cases and market information. Each entry should state its source, date, units and limitations. A structured XLSX or CSV (or equivalent) format would support updates.

- **Support programmes and financing information, public sources:** Official programme rules, eligibility requirements, eligible measures, application steps and financing conditions, including national and municipal support. Sources will include official webpages and published documents, organised into a dated reference catalogue that can be maintained.

- **Consultation templates and guidance, provided by the city and advisory offices:** Existing questionnaires, checklists, report templates and next-step guidance, in DOCX, XLSX or PDF.

The tool should distinguish verified records, user-reported information, reference assumptions, and calculated results. Numerical estimates should use approved calculation logic; AI-generated explanations should remain traceable to these inputs. Data completeness, uncertainty, and source dates should be visible throughout.

This Use Case is subject to change through the GenAI for Good Challenge phases as collaboration shapes preparation for piloting and implementation.