

OPENGRID PLATFORM COMPONENTS – OUTPUT VISUALIZATION

One open platform, powerful interoperable components

OpenGrid's foundation is robust, trusted, open data, with task-ready applications layered on top. Each component was shaped by conversations with the grid planning community and user research on modeling pain points, and each deep-dive sets out what we heard, the outcome we're working toward, and a draft product concept for the community to react to.

Each deep-dive draws on more than 65 conversations with over 55 participants globally across the grid planning ecosystem, conducted in early 2026. We group participants into six personas along two lines: whether they produce analyses or use them, and whether they sit inside or outside the organization whose decisions are at stake. Each group brings different needs, and together they shape how every OpenGrid component is designed. To protect confidentiality, interviewees are identified only by organization type. The draft product concepts are starting points for OpenGrid's Technical Committee and working groups to refine, and we expect scope, priorities, and naming to change as that work happens.

This summary describes the current vision for each component of the OpenGrid Platform. They are not definitive specifications and are still subject to ongoing refinement. Each component will be shaped by the Technical Committee and a working group that is open to anyone who wants to take part. We expect scope, priorities and naming to change as that work happens. Comments, corrections and alternative proposals are welcome. We are publishing at this stage deliberately, so that direction can be shaped in the open rather than presented once it is already fixed.

Output Visualization

Pain points, from user research

Most people who need a model's results never open the model, so modelers hand-build charts once per audience, per study, and decision-makers receive a single answer they cannot interrogate. Every internal decision-maker and most external evaluators we interviewed described pains tied to how results are communicated.

What we heard

- A commercial software provider said the time-consuming parts of a study are data extraction, summarization, cost calculations, and stakeholder communication.
- A US ISO named processing and interpreting large volumes of simulation output as a key pain point, historically handled with in-house automation tools and now a priority for AI pattern recognition.
- A European data think tank said policymakers want snappy numbers and that modelers' real value lies in interpretation.
- A US industry association said interveners struggle to access and understand models, and expertise "doesn't grow on trees."
- An open energy data provider is building interactive dashboards so non-technical users can explore data through graphs.

What users asked for

- Two California CCAs want views of results across a range of uncertain futures.
- A US municipal utility suggested simple, explorable interfaces, such as sliders on a toy model, for non-modelers.

Vision

Planning results are easy to explore, compare, and explain, so decision-makers can weigh the tradeoffs between good options.

Turning model output into insight takes minutes, where today it takes weeks of extraction and spreadsheet work. Recurring questions such as reliability, cost, emissions, and land use have familiar views, so results from different studies can be read side by side, and anyone can build on those views for their own needs.

Decision-makers see the full range of good options: which choices hold up across futures, where the real tradeoffs are, and which portfolios cost about the same while serving different priorities. A commissioner, an intervenor, an investor, and a community member can each understand what a study says and what it means for them, without running the model themselves.

Draft product concept (for discussion)

Output Visualization is the presentation layer at the end of the pipeline. It reads model results and renders them through a library of standard default views for the questions every study answers: dispatch curves, LMP and congestion maps, capacity expansion stacks, reliability metrics, and benefit-cost and scenario comparisons. Where results follow shared formats, the same views work across tools, so results from different studies can be read the same way.

Three things distinguish it from a generic BI tool:

- 1. Accepted defaults.** General-purpose visualization libraries leave every team to design grid charts from scratch, so no two studies look alike. The goal is a set of default views the community agrees are sound for the basics, ready to use out of the box and customizable when needed.
- 2. Methodology travels with the visual.** Assumptions, sources, and versions surface alongside the numbers, which is what makes a chart defensible in a regulatory proceeding.
- 3. Exploring the decision space.** An audience can adjust a cost ceiling, a reliability target, or a weather scenario and watch which options stay viable and how the tradeoffs move, so debate can focus on tradeoffs across a set of scenarios. This depends on methods that generate many near-optimal alternatives, such as modeling to generate alternatives (MGA) or fast surrogate models, maturing enough to run routinely at planning scale.

Boundaries. This renders results; it does not produce them, author models, host data, define semantics, or sequence runs. It builds on mature general-purpose visualization libraries and adds grid-domain and provenance awareness on top.

Who We Heard From

Our platform components were shaped by more than 65 conversations with over 55 participants across the grid planning ecosystem. We group them into six personas along two lines: whether they produce analyses or use them, and whether they sit inside or outside the organization whose decisions are at stake.

Producer Side — People Who Run the Models

Transmission-System Users. Engineers and planners at ISOs, RTOs, TSOs and vertically integrated utilities who model the bulk system, often chaining three to five specialized tools through a single study.

Primary Distribution-System Users. Operators and modelers of distribution networks, from Europe's largest DSOs to small municipal utilities with one- to five-person teams.

Point-Source Modelers. Developers, hyperscaler procurement teams and community energy buyers who model a single point of grid interaction, with analyses that must be defensible enough to underwrite capital commitments.

Consumer Side — People Who Use the Results

Internal Decisionmakers. People who use model outputs to allocate their own organization's capital and must trust analysis they did not run.

External Evaluators. Regulators, intervenors, advocacy organizations, think tanks and data-infrastructure bodies who use outputs to scrutinize decisions made by better-resourced entities.

Straddling Both

External Primary Modelers. Analysts at public utility commissions, reliability councils, think tanks and capacity-building organizations who run their own models to examine decisions made by others.