PERINIMBLE · GRID DATA FAMILY

Grid Data Enhanced Analytics

Live operations and planning analytics for electricity, gas, and water — GIS, SCADA, and AMI joined into one picture.

Grid Data Enhanced Analytics (GDEA) brings in a utility's connectivity model from the utility's GIS, its real-time SCADA telemetry and events, and its AMI meter reads and events — supplied by the Grid Data Management Platform where both are deployed together — joins them, and serves the result as a live map and a full suite of network analytics — across electricity, gas, and water, where which commodities a deployment runs is a setting, not a build. On top of that join sit real power-flow and hydraulic analysis, a what-if scenario sandbox, a complete large-load interconnection workflow for the data-center era, and a library of network analysis checks. GDEA is deliberately monitoring-only: there is no command path to the field, which makes it safe to put in front of every desk in the utility.

Every asset	Live	Multi-commodity	Checks & solvers
on one live map	telemetry ingested & archived	electricity · gas · water	scoped per commodity

KEY FEATURES

Live network map

The whole network stays fluid at every zoom level, with live telemetry and events overlaid on the connectivity model, every meter at a real addressed building — and operators' own tags and comments on any asset.

Power flow & hydraulic analysis

Power flow for every electric feeder, and hydraulic analysis for the gas and water networks — real physics against the network as imported.

Scenario sandbox

Propose a change to any of the networks — reconductor a feeder, replace a main, re-set the city gate — and see exactly what moves. Base and scenario are compared side by side, so the difference is the change and nothing else.

Fault location

Locates faults by independent methods — from measured fault current, and from which meters went dark — and says whether they agree.

AMI meters & communications

Every meter is a service point with its interval reads and events — tamper, last gasp, power restored — and GDEA tells a communications fault from an outage, so silent meters that still have power do not send a line crew.

Reliability engineering

SAIDI, SAIFI, CAIDI, MAIFI, and CEMI computed to IEEE 1366 — per feeder, per substation, and system-wide.

Capacity, voltage & demand

Feeder-by-feeder headroom with the binding constraint named, conservation voltage reduction analysis, and load broken down by customer class.

Asset risk & investment planning

Transformer thermal aging, a per-asset probability of failure, and candidate projects ranked against the constraints the analytics actually found — what to build, and in what order.

Gas & water analytics

Gas: unaccounted-for gas and its trend, regulator droop and lock-up, odorant intensity, line pack, the leak register, pipe material and emissions, and design-day headroom. Water: night flow and its trend, bursts, valves and pumps, water age and chlorine, turbidity, demand forecast, fire flow, and pipe criticality.

Cross-commodity interdependency

What a failure in one network does to plant in another — the de-energized feeder that was carrying a pump station — inferred, and labeled as such.

Network analysis checks

Checks across the model, flows, condition, revenue, communications, and weather, scoped per commodity — every finding ranked, linked to the map, and honest about coverage.

Large-load interconnection

The data-center queue as a register: likely duplicates flagged with honest gross and net totals, feasibility at every ramp step, connection options compared on one scale — plus fault duty, UPS voltage step, and N-1 alternate-supply checks at the point of connection.

EV charger detection

Home EV charging found in meter data — Home Energy Management's detector, run across the whole network — and set beside the utility's record: chargers the meters show that the record does not, and the reverse. The record is reported on, never rewritten.

Service order integration

The utility's service orders mirrored beside what GDEA found: the work open on each asset, the findings nobody has been sent to, and a request for work raised from the gap — requested by GDEA, always dispatched by the utility.

ONE QUESTION PER SCREEN

Every GDEA surface is built to answer a single operational question, completely:

Map	Where is it, and what is happening to it right now.
Scenario	What would this change do — compared with today, and refused with reasons when it cannot hold.
Analysis	What is wrong with the record — worst first, per commodity.
Faults	Where the fault was — from the fault current, and from who went dark.
Reliability	SAIDI, SAIFI, CAIDI, MAIFI, and CEMI to IEEE 1366 — regulator-ready.
Capacity & CVR	How much more each feeder can take, and what voltage headroom is worth in demand.
Asset risk & planning	Which assets are aging or likely to fail — and what should be built, in what order.
Large loads	Does this data center fit, what would make it fit — and what is that worth.
EV chargers	Which premises charge an EV that the records do not know about.
Gas	Where the gas goes, which leak is past due, and which main runs out first.
Water	Is this district leaking or bursting, how old is its water, and how much fire flow can it draw.
Service orders	Is anybody doing anything about this — and what has nobody been sent to.

FROM FIELD TO INSIGHT

1 **Import the model —** the connectivity model arrives from the utility's GIS for every commodity — versioned, and checked by continuous model-quality analysis.

2 **Connect to SCADA —** GDEA speaks DNP3 and IEC-104 to the SCADA estate, taking telemetry and events one way: inward.

3 **Join and analyze —** SCADA telemetry, and AMI reads and events already validated by the Grid Data Management Platform, are joined to the model — then power flow and hydraulic analysis run for every commodity.

4 **Serve every audience —** the same joined, analyzed picture powers the control room, the planner, the gas and water operators, and the executive dashboard.

DESIGNED FOR TRUST

- **Monitoring-only by design —** no control path to the field — built into the product, not left to configuration.
- **Honest about evidence —** never presents "not measured" as "nothing found"; names stale evidence and incomplete results.
- **Scale as a first principle —** built for the whole network at once — every asset, every meter, every reading.
- **Self-aware analytics —** GDEA watches the quality of its own findings, so it can catch the platform being wrong.
- **Integrated by contract —** documented APIs for integrators, and access for AI assistants.

USE CASES

- **Storm and outage response —** fault locations from independent methods shorten patrols and restoration.
- **Regulatory reliability reporting —** IEEE 1366 indices computed from source data, defensible in front of a regulator.
- **DER and load-growth planning —** EV detection finds today's chargers; headroom, CVR, and the sandbox place the next.
- **Data-center interconnection —** honest queue totals, feasibility at every ramp step, options compared on one scale.
- **Evidence-based asset investment —** failure risk, aging, and ranked projects make budgets defensible.
- **Gas and water programs —** loss and its trend, the leak register, bursts, design-day headroom, and fire flow.

ONE PLATFORM, MANY DESKS

Control-room operators	The live map, live feeds, alarm overlays, and the equipment detail panel.
Planning engineers	Capacity, CVR, power flow, the scenario sandbox, and ranked investment planning.
Interconnection engineers	The queue register, connection ladder, and fault-duty, voltage-step, and N-1 screens.
Gas & water operators	Gas loss, regulators, leaks and pipe — and water leakage, bursts, pumps, and quality per district.
Integrators & administrators	Documented APIs, roles, user guides, and a simulator connection for testing.

BETTER TOGETHER

GDEA is the family's network eye: GDMP supplies validated AMI meter reads and events, Grid Data Simulator supplies SCADA data for testing, Home Energy Management lends it its EV detector, Reporting embeds its insights, and Whisper-Wind gives it a voice.