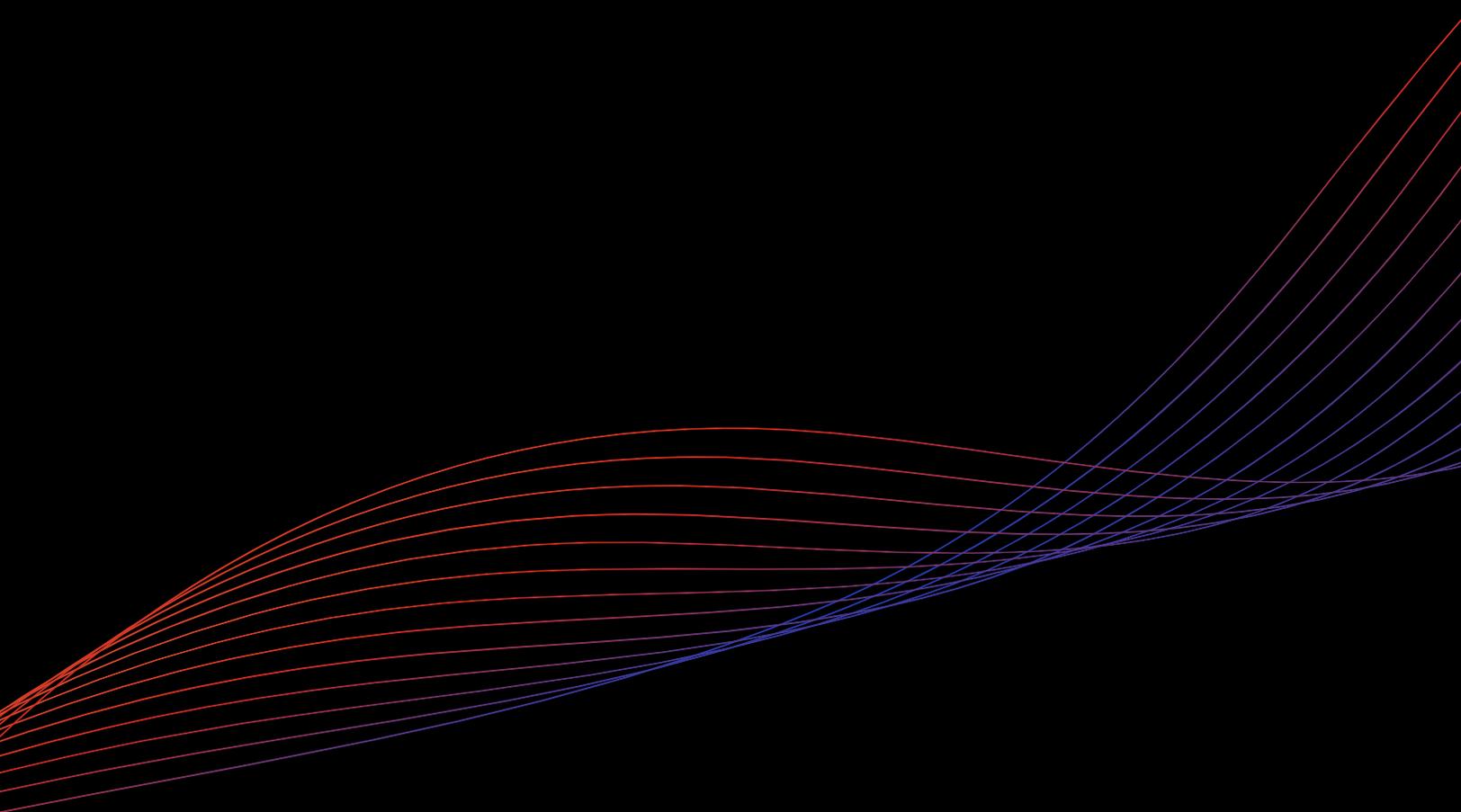


PLEXOS

PLEXOS Cloud

Powerful, Cloud-based Energy
Market Modeling Software



Contents

Exploring the Cloud	4
Soar to New Heights	5
Sky-High Compute Power	6
Safe & Secure	7
Join Us in the Cloud	8



PLEXOS Cloud is a Software as a Service (SaaS) solution designed to bring **more interaction, greater precision, and contextual insights to energy market modeling**. PLEXOS Cloud is 100% compatible with PLEXOS Desktop, which is integrated into the analyst workflow.

It extends the features of the on-site PLEXOS infrastructure to offer revolutionary compute power in a modern user interface, so your entire organization will have access to powerful simulation software, data-rich insights, and collaborative tools—anytime, anywhere.



**Join us in the Cloud,
the future of energy
market modeling.**

“PLEXOS Cloud helped to enhance the visibility of the network, creating a better understanding of the integration and overall situational awareness between the generation solutions on top of the transmission network and the resulting power flows and grid economics.”

– Lincoy Small, Power System Engineer,
Jamaica Public Services Company

Exploring the Cloud

Today's energy industry demands the flexibility and accessibility of cloud computing for market modeling. Complex renewable energy generation creates large variations in the energy supply; changing market dynamics, weather, transmission, and supply require continuous optimization; and the transition from fossil fuels to renewable energy requires supply chains to integrate electricity→ gas→power2x.

All these factors drive the need to integrate cloud computing services for modeling solutions. Innovative organizations that embrace the digital transition have the opportunity to outpace their competitors and help change the world.

Cloud computing has many advantages, among them:

- **On-demand**
Cloud services are available over the Internet and can be consumed on an as-needed basis
- **Elastic**
Right-sizing infrastructure can expand and contract automatically based on capacity needs
- **Self-service**
Many cloud services can be directly consumed by the user from the user-interface (UI) or an application programming interface (API)

THE FUTURE IS IN THE CLOUD



53% of chief information officers (CIOs)

say that the greatest potential of Cloud-based software is to “improve business revenue using cloud agility, scalability or flexibility”

**Source: Gartner Annual CIO Survey*

“Cloud computing services provide software, software development, and basic computing resources to customers on a subscription basis over the Internet.”

– Gartner



Soar to New Heights

Energy Exemplar developed PLEXOS Cloud to leverage the advantages of cloud computing and to offer customers the most innovative modeling solution in the market. With this powerful tool, organizations can confidently navigate the future—unconstrained by the limits of traditional modeling software.

PLEXOS Cloud offers a single system for running and communicating studies across all users, markets, and locations. This holistic system increases operational vision, so users can leverage insights for making rate cases, integrated resource planning, and presentations to oversight boards.

From conducting price forecasting, evaluating capital investments, or assessing risk, PLEXOS Cloud can accelerate your time-to-decision faster than ever before, while continually reaching greater precision in study outcomes.

The interactive visualizations of PLEXOS Cloud helps to speed up study interpretation and decrease stakeholder learning curves. As your organization integrates PLEXOS Cloud throughout the enterprise, data silos of the past will be transformed into insight-rich hubs, generating better collaboration, wiser decisions and smarter investments.

ADVANTAGES OF PLEXOS CLOUD:

- **Quicker Insights:** Powerful computing shortens the time to your first meaningful insight
- **Right-sized Infrastructure:** For customers that require additional compute for yearly, quarterly, or monthly projects—utilize additional compute at the click of a button; from 16 cores to as many as 1,000 cores one day at a time
- **Stochastics:** Summarize results across hundreds of runs with stochastic analysis; PLEXOS computes a single optimal decision that is best hedged for the uncertainty represented by the stochastic samples
- **Easier to Use:** A new, modern user interface with multiple themes allows for a more intuitive experience

Sky-High Compute Power

PLEXOS Cloud radically changes how your organization runs market simulations and communicates study outcomes. Data-intensive simulations can take hours or even days to complete using an on-premise server or laptop, but PLEXOS Cloud has advanced computing capacity that can dramatically reduce simulation run times.

In fact, PLEXOS 9 on PLEXOS Cloud can run simulations up to 20% faster than PLEXOS 8.3 running on traditional infrastructure. And with flexible compute, users can choose the size of the on-demand compute environment, with access to more memory and cores based on needs. Cloud Burst provides the ultimate flexibility—enabling access to additional capacity in 24-hour increments, whenever needed.

Some of the powerful features of PLEXOS Cloud include:

- ✓ Includes all the advantages of PLEXOS desktop, plus the innovative features of PLEXOS Cloud, including accessibility and increased compute power
- ✓ Flexible compute allows users to choose the compute capabilities they need: high memory, high core, high clock speed, and engine version
- ✓ Native dashboards and custom reports designer
- ✓ Complement existing PLEXOS desktop infrastructure with PLEXOS Cloud for more, and larger simulations
- ✓ Cloud Burst offers additional computing capacity in 24-hour increments
- ✓ “Always-on” application with on-demand simulation compute
- ✓ Hosted by Energy Exemplar via Microsoft Azure®
- ✓ Powerful AI and map-based insights improve output analysis
- ✓ Licensed by Base and Cloud Burst Cores

Not only does PLEXOS Cloud improve upon the traditional PLEXOS software, it also offers entirely new capabilities. PLEXOS Cloud’s flexible infrastructure allows users to scale computing capacity for peak study periods and stochastic runs.

Stochastic dashboards summarize results across hundreds of runs, allowing users to more easily interpret and leverage study outputs. PLEXOS offers three distinct approaches to coping with uncertainty:

- Scenario Analysis
- Monte Carlo Simulation
- Stochastic Optimization

Monte Carlo simulation can tell you what the optimal decision is for each of a number of possible outcomes, assuming perfect foresight for each scenario independently. It assumes perfect foresight for each stochastic sample and then computes the optimal decision for each of a number of possible stochastic samples independently.

Stochastic Optimization’s goal is to find some policy that is feasible for all (or almost all) the possible data instances and maximize the expectation of some function of the decisions and the random variables. Stochastic optimizations mimic real power system dispatches because the decision maker makes a decision based on information at hand, after which a random event occurs and then a new decision.

Role-based visualization drastically flattens the learning curve, driving more stakeholder engagement and empowering teams with the right information.

Study outputs are only as strong as the data inputs, so PLEXOS Cloud offers pre-defined datasets and data management, so users can spend more time maximizing simulations and less time wrangling data. Versioning provides teams with critical data governance and visibility on changes to study inputs.

The PLEXOS Cloud application programming interface (API) is significantly faster than the traditional API, and offers all the key capabilities available in the desktop version. Users can upload data, run simulations, view study status, and download outputs—all from the API.

PLEXOS Cloud API Features

STUDIES

- Query study input data
- Examine changesets
- Upload inputs
- Download inputs

SIMULATIONS

- Launch simulation in PLEXOS Cloud
- Check simulation status
- Monitor simulation logs
- Register webhooks to push results to cloud-hosted storage

SOLUTIONS

- Discover what output data is present in a solution
- Query study output data
- Download sim results
- Explore simulation metrics

POOLS AND ENGINES

- Discover current status of your tenant's compute pool
- Discover available PLEXOS engines

Safe & Secure

End-to-end security has never been more important, and PLEXOS Cloud provides world-class security. With PLEXOS Cloud, data is secure, backed-up, and totally recoverable. In other words, it's disaster proof.

Here's how PLEXOS Cloud protects your data:

- PLEXOS Cloud is hosted by Microsoft Azure
- Data encryption in transit and at rest with application tenant level encryption
- Recurring security scans, penetration testing, and vulnerability testing performed by a 3rd party
- Single Sign-On (SSO) authentication to integrate with existing organization access
- 24x7 Application Monitoring, Security Monitoring and Support
- Status page to view real time status, incidents, and notifications on planned maintenance
- Recurring backups and disaster recovery
- Each customer has their own tenant, no other customer can access that tenant
- ISO 27001 Certification
- SOC 2 Type 1 and SOC 2 Type 2

Join Us in the Cloud

The future is in the cloud. It's fast, it's secure, it's agile.

Companies across all industries are adopting cloud-based solutions for all kinds of applications, and the energy industry is no exception. And while innovative businesses are embracing the flexibility and accessibility that cloud solutions offer, those slow to migrate to the cloud risk being left behind.

PLEXOS Cloud — the most advanced energy market modeling solution available today.

CASE STUDY

Powering a Nation

“With the Cloud, the solution data is presented in already designed data formats that are more easily analysed.”

Lincoy Small, Power System Engineer, Jamaica Public Services Company

PLEXOS Cloud features:

- ✓ A single platform for users across all markets
- ✓ Enhanced visual reporting
- ✓ Modeling ancillary services
- ✓ Cloud Burst, offering access to higher processing power
- ✓ Edit data directly in Microsoft Excel

PLEXOS Cloud is Helping Jamaica Public Service Company Power Optimize its Decisions

Modeling energy markets has never been more important. Rising global energy demand, policy shifts, and digitization all present new challenges that require robust optimization software. But many modeling solutions can't provide the power, speed, accuracy, or flexibility required to keep up with the pace of change.

Lincoy Small, a power system engineer with Jamaica Public Service Company (JPSCO), found that old simulation platforms lack many of the capabilities that make PLEXOS Cloud a revolutionary solution.

As the sole distributor of electricity in Jamaica, JPSCO needed a modeling solution to meet the challenges of the evolving world. Especially important for JPSCO was the ability to easily analyze study outputs and collaborate with others.

“PLEXOS Cloud helped to enhance the visibility of the network, creating a better understanding of the integration and overall situational awareness between the generation solutions on top of the transmission network and the resulting power flows and grid economics,” Small says.

With PLEXOS Cloud, Small reports that he can easily use the enhanced visual reporting in high level presentations to colleagues and an external audience. This helps create greater awareness and understanding of grid studies and their resulting network impacts. Older simulation platforms don't offer visual reporting that are as accessible as PLEXOS Cloud, Small says.

Enhanced Reporting

One of the goals in the development of PLEXOS Cloud was to give customers more digestible visual reports, so they can spend more time making the best decisions rather than analyzing data. At JPSCO, Small has experienced platforms where users had to manually extract the data and export it into reporting templates (prepared by the user) in another application before the data could really be analysed.

“PLEXOS Cloud helped to enhance the reporting of solutions after conducting a simulation that improved our data analytics of the solutions developed,” Small says. “With the Cloud, the solution data is presented in already designed data formats that are more easily analysed.”

Ultimately, this saves customers hours in manually preparing reports while providing easier to understand data, much faster.

More Power

The responsibility of distributing energy to an entire nation requires a robust modeling solution. So, when extra processing power is required, PLEXOS Cloud offers access to reserve computing.

“PLEXOS Cloud Burst gives access reserve computing -- up to 20% faster than on-premise solutions to higher processing power with the option to select different servers to execute the solution,” Small says.

On older modeling platforms, Small says that accessing more processing power wasn't an option, so even during busy times, he was limited to the speed of his desktop computer.

Another benefit Small experienced with PLEXOS Cloud: easier geo-positioning and referencing of generation and transmission assets, which wasn't possible in older software platforms.

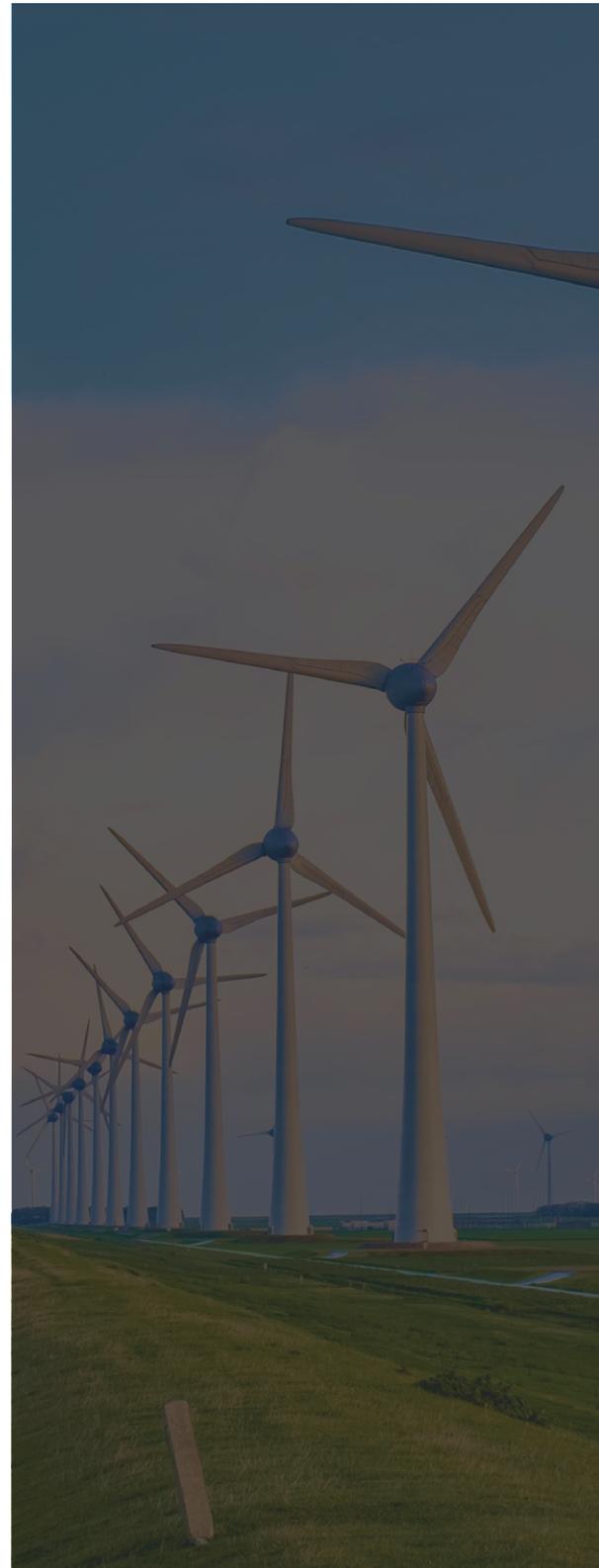
The Future of Decision Analytics

PLEXOS 9 + Cloud, the latest version of Energy Exemplar's PLEXOS software, is truly a revolution in the approach to energy modeling and simulation. With expanded modeling capabilities, faster processing, better visual reporting, and Cloud delivery option, PLEXOS 9 is the future of decision analytics.

Talk to Energy Exemplar today to learn how PLEXOS Cloud could help your business.

“PLEXOS Cloud Burst gives access to higher processing power with the option to select different servers to execute the solution.”

Lincoy Small, Power System Engineer, Jamaica Public Services Company





Energy Exemplar

17 Bagot Street
North Adelaide SA 5006
Australia

energyexemplar.com