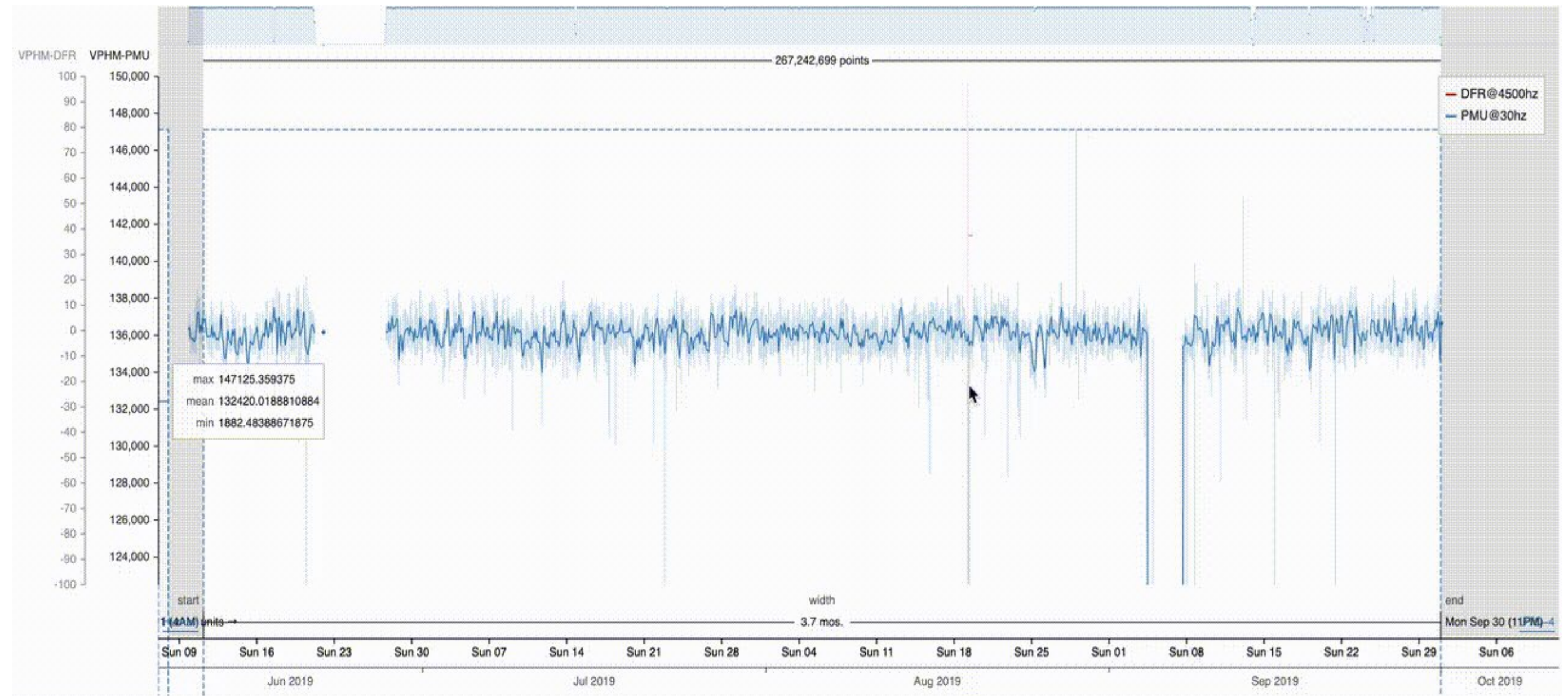


PingThings

Powerful time series data platform
bringing intelligence for Future
Grids.

NASPI
Fall
2025

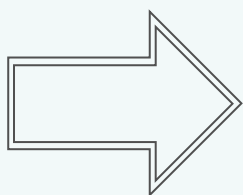


PingThings is 3 Things

PingThings

1

A scalable, cloud-based platform for **time series measurements** from **physical systems with real world context.**



Ingest



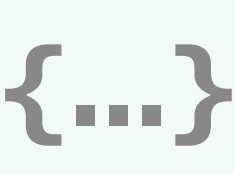
Storage



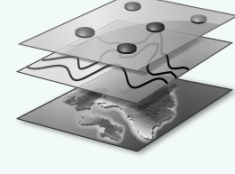
Query



Time Series



Metadata



Geospatial and Topology Data

2

All the built-in **power tools** you need **to understand, analyze, learn from, and build with** your data.



Real-time and All-time Analytics



ML and AI



Rapid Analytical App Development



Data Collaboration and Governance



Extensive APIs for all Services



Rapid Dashboarding and Analytical Prototypes

3

A **rapidly growing suite of applications** driven by sensor data and an **active, expert user community.**



Build Your Own Applications

The Grid is Changing Data Analytics are Critical

What are we **gaining**?

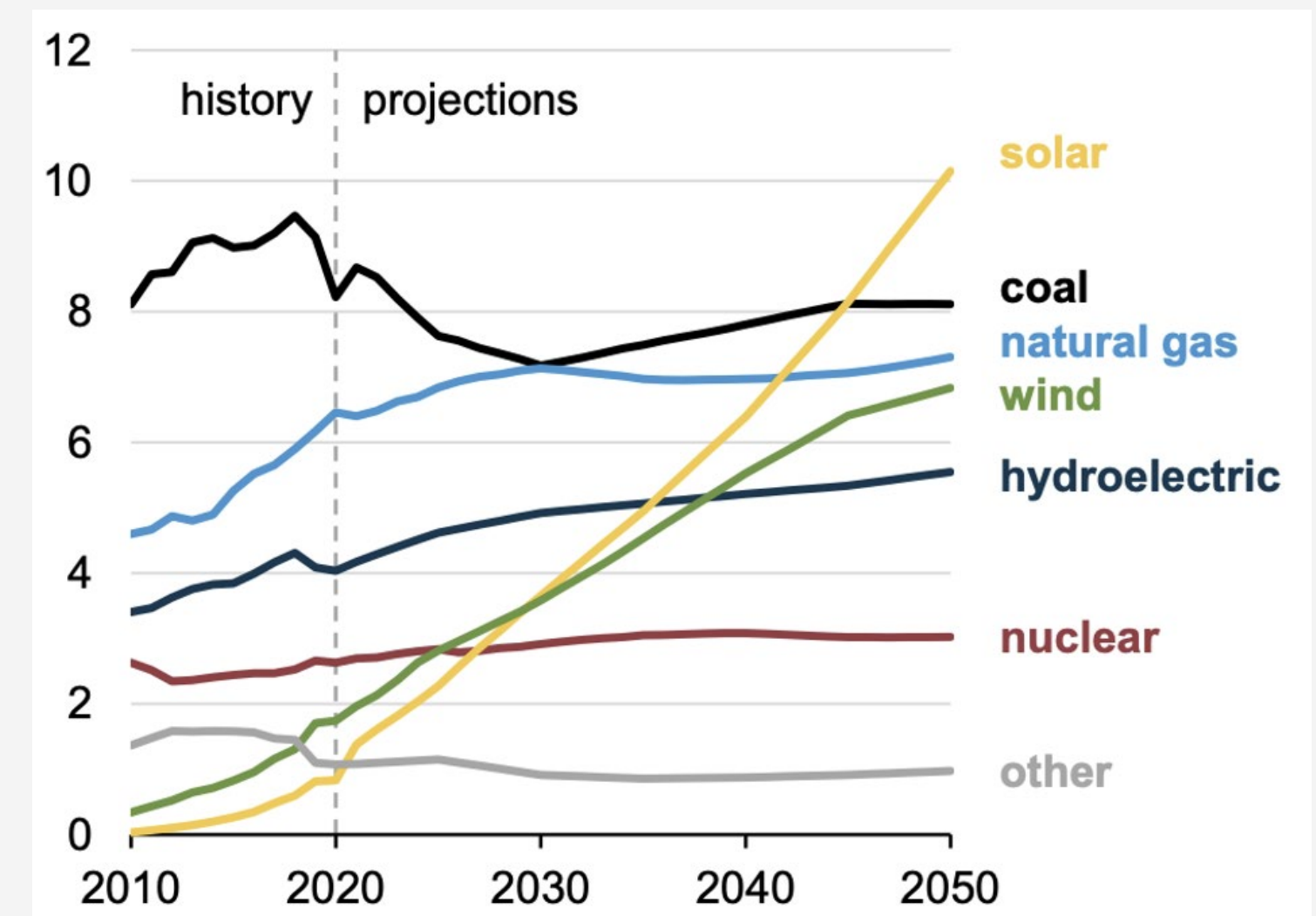
- + Renewable energy resources and **decarbonization**
- + **Electrification** of entire sectors of the economy, including transportation
- + Massive **increases in load**
- + **Behind-the-meter** and distributed energy resources
- + **Data center** development

What are we **losing**?

- Large fossil generation providing **grid inertia**
- Predictability in the **direction of power** flow
- Insight into true grid conditions and understanding of **asset health**
- **Retiring workforce** and resulting loss of expertise
- Well understood and **predictable demand curves**
- **Simplicity on the grid** as the number of connected devices increases exponentially

World net electricity by source

trillion kilowatt hours



<https://www.instituteforenergyresearch.org/international-issues/eia-expects-energy-demand-to-increase-almost-50-percent-worldwide-by-2050/>

PMU Data Not Fully Being Used Why?

AI Search result yields the following:

1. Integration Challenges

- Legacy Systems: Many utilities still rely on SCADA systems, which are not designed to work with high-resolution, time-synchronized data.
- Data Silos: PMU data is often not integrated into the broader energy management systems (EMS) or decision-making tools.
- Interoperability: Different vendors may use varying formats, making integration and data fusion complex

2. Lack of Advanced Analytics

- Limited Use Cases: Many utilities use PMUs only for post-event analysis or monitoring, not for real-time control or predictive analytics.
- Shortage of Expertise: There is often a skills gap in data science, signal processing, or power system dynamics within traditional utility teams.
- Raw Data Overload: PMUs generate large volumes of data (30–120 samples per second), and utilities often lack tools to analyze it effectively in real time.

3. Cost and Investment Barriers

- High Deployment Costs: PMUs, communications infrastructure, and supporting software require significant investment.
- Unclear ROI: For many utilities, especially smaller ones, the return on investment isn't immediately obvious unless there's a history of instability or blackouts.
- Funding Gaps: In some regions, regulatory or government support is limited, stalling expansion of wide-area monitoring systems (WAMS).

4. Cybersecurity and Data Privacy

- Sensitive Data: PMU data can reveal real-time system states, which is critical infrastructure information.
- Regulatory Hurdles: Data sharing between utilities or ISOs/RTOs can be restricted due to cybersecurity regulations or confidentiality concerns

5. Communication Infrastructure Limitations

- Latency and Bandwidth: PMUs require fast and reliable communication networks for real-time applications.
- Rural or Remote Installations: Infrastructure may not exist to support real-time transmission from all locations.

6. Conservative Industry Culture

- Risk Aversion: Power systems are mission-critical; operators are cautious about adopting new tech without long-term validation.
- Slow Adoption of Innovation: Utilities often wait for proven use cases and standardization before large-scale rollouts.

PMU Data Not Fully Being UsedWhy?

Summary for AI Search result:

Challenge Area	Description
1. Technical Integration	Legacy systems, lack of tools
2. Analytics Limitations	Few real-time/predictive use cases
3. Cost Constraints	High upfront cost, unclear ROI
4. Cybersecurity Concerns	Data sensitivity, compliance issues
5. Communication Gaps	Latency, limited rural coverage
6. Industry Conservatism	Risk aversion, slow innovation adoption

Time is More than Just Money

100 PMUs each with 20 channels of data @ 30Hz generates 1.9T data points in a year

	Read Speed (data points per sec)	Time to Read 1.9T Data Points	Your Data is...
Legacy Historians	10,000	6.0 years	history, no one looks at it
Generic Cloud Solutions	100,000	7.3 months	unusable and frustrating; critical use cases are out of reach
	1,000,000	3.1 weeks	
PingThings	10,000,000	2.2 days	a catalyst for transforming your entire business, enhancing and accelerating all processes.
	100,000,000	5.2 hours	
	1,000,000,000	31.5 minutes	

Transmission PMU Use Cases

Dozens of existing use cases, hundreds for your team to uncover

\$1.8

Million
Avg ROI per app per year.

100x

ROI
Calculated by a utility partner based on time savings, improved SAIDI/SAIFI scores, optimized capital planning and efficiency improvements.



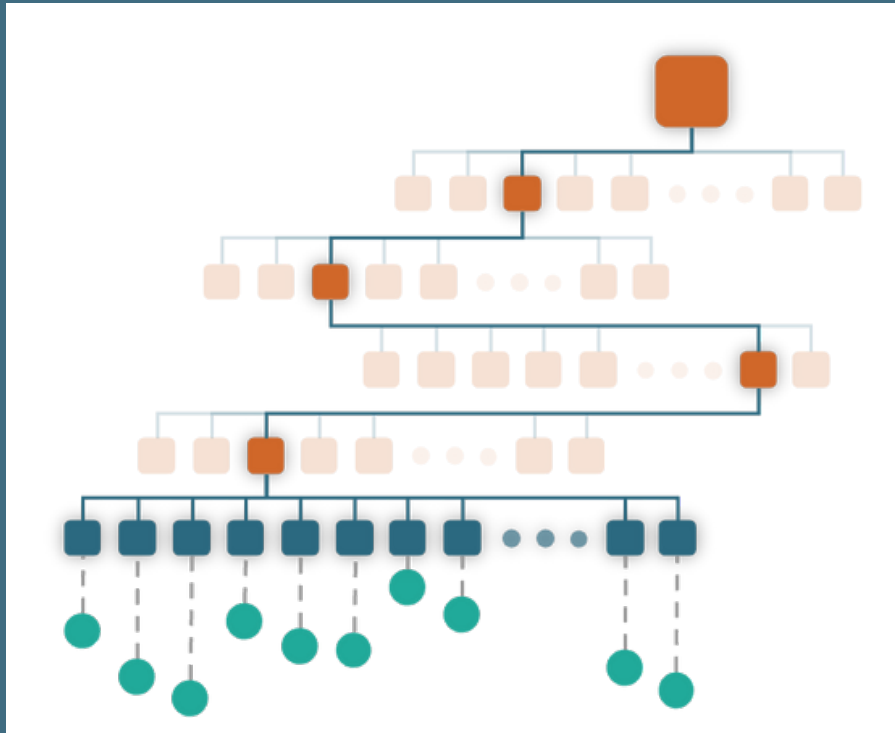
Data Investigation

Challenge

There are **limited options for storing and viewing** historical PMU data, particularly in the context of additional SCADA data, COMTRADE files, etc.

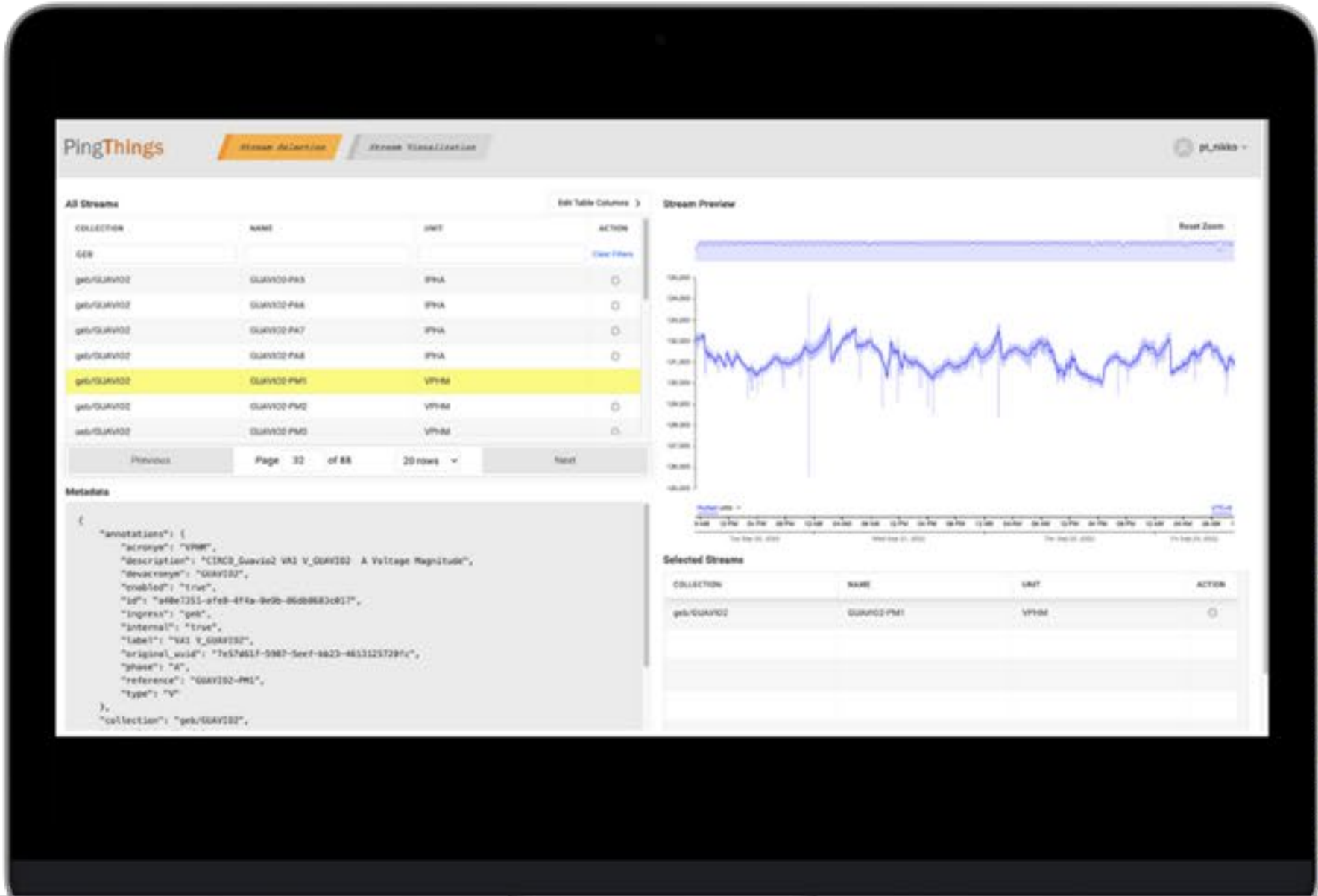
BTrDB

High performance, extremely scalable time series database for real world sensor data at scale.



Solution

The PingThings PredictiveGrid™ platform provides a single application to ingest PMU and SCADA data and **provide immediate visualizations** to users.



Data Quality



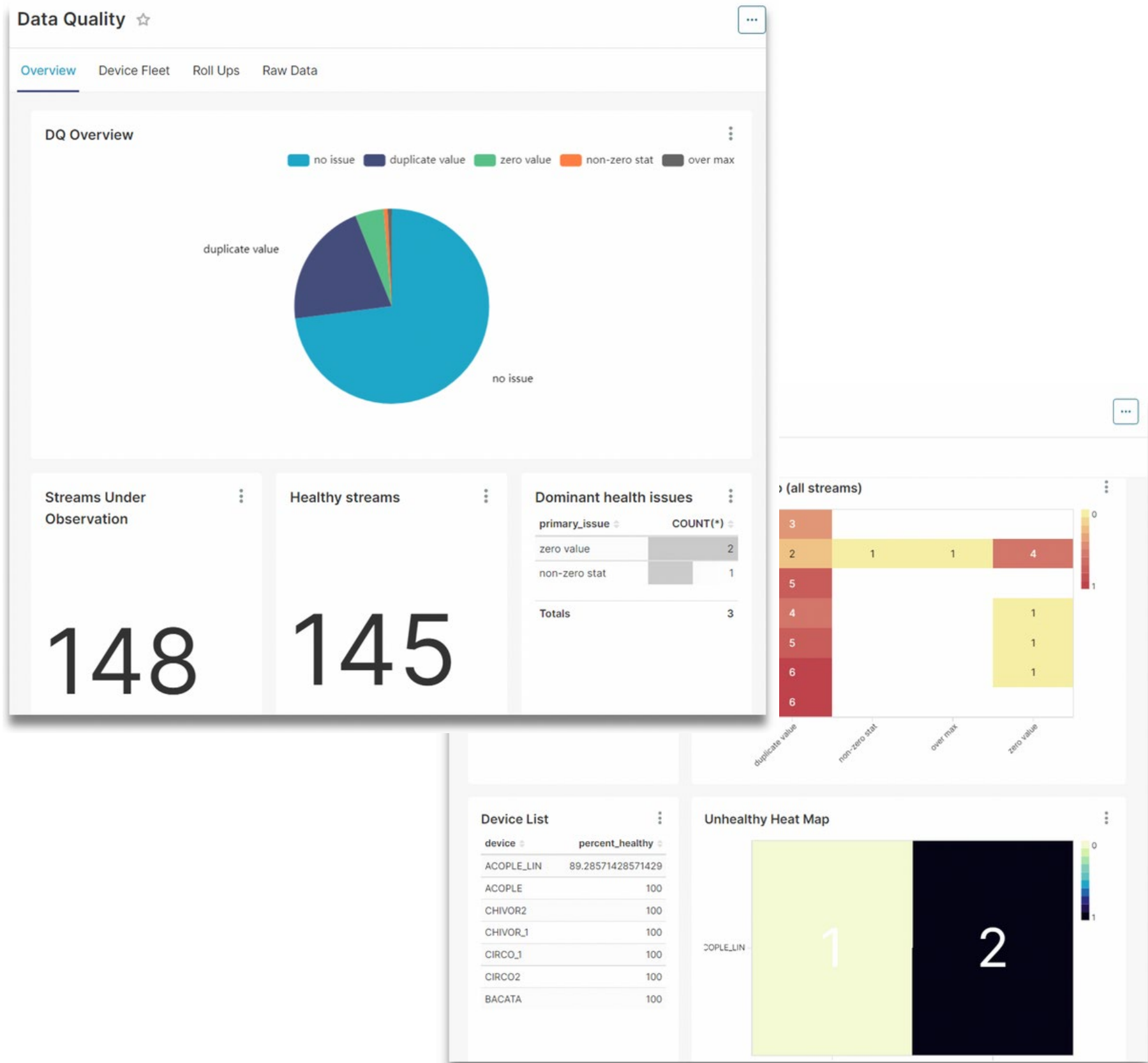
Challenge

There is currently no centralized system for understanding or **analyzing data quality issues** from sensor fleets.



Solution

PingThings’ **data quality assessment** reviews data gaps, time configuration issues, low voltage streams, incorrect phase labels, missing voltage measurement streams, and more.



Rapid Application Development & Deployment



Challenge

Developing reports for individual synchrophasors or assets can be a manual and **time consuming process**.

Without a framework to rapidly develop and deploy new interactive reports, a business case and ROI for additional analytics is an uphill battle.



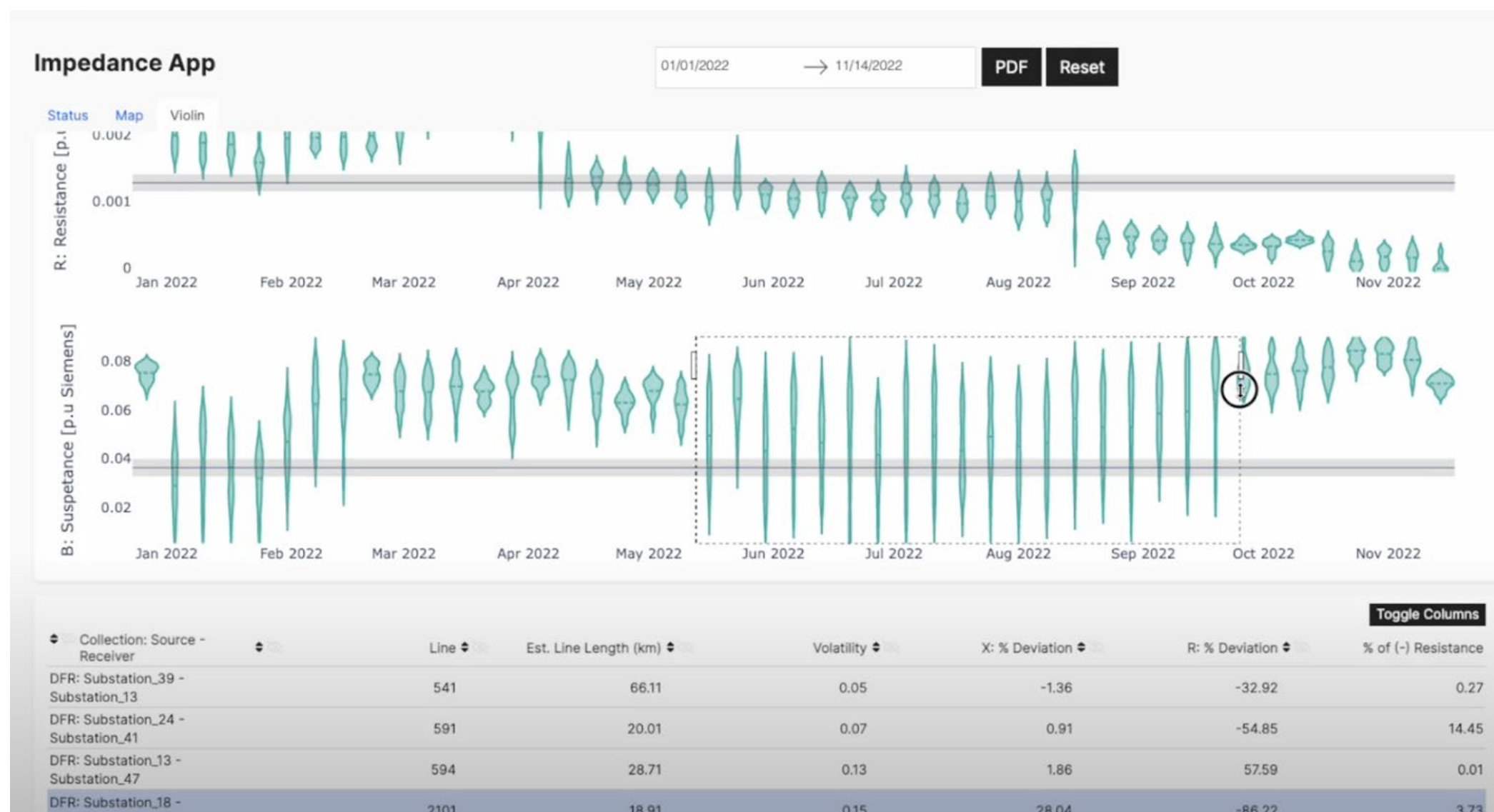
Solution

PingThings' PredictiveGrid™ platform provides robust support for rapid application development in a **low-code application-building environment**.

This allows a prototype to production deployment with **new analytics, dashboards, and more in hours** rather than months or years.

Algorithms connect to the front-end visualization platform shown below

Easily swap out code or visualizations to rapidly deploy **new reports**

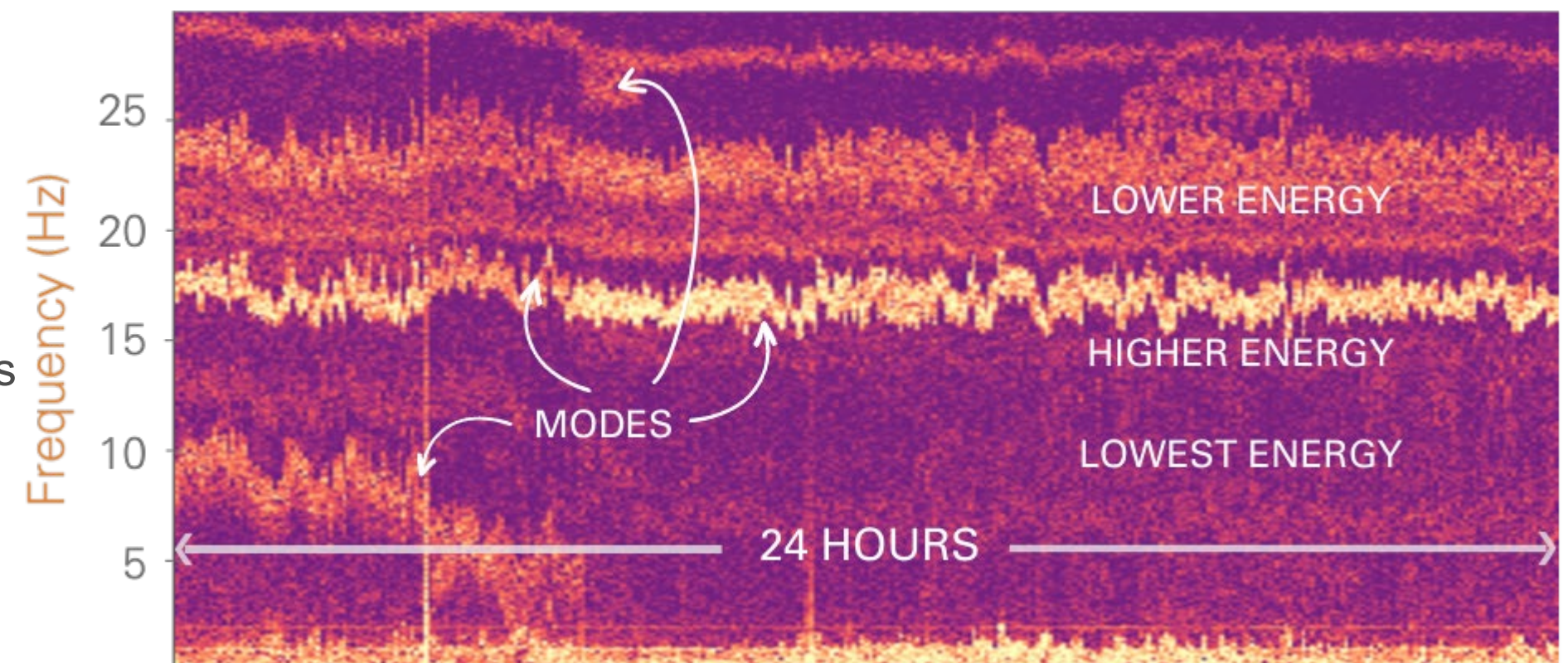


Cost Effectively Integrating Renewables

Leading utilities are using **synchrophasor & waveform** data to identify and analyze grid dynamics caused by solar, wind, FACTS, loads, and traditional generators

- Grid dynamics are omnipresent, demonstrating a richness in “ambient” data for understanding the grid
- Many are **poorly damped** which is not captured by models
- As sources of oscillations (IBRs, FACTS, etc.) increase, so does risk to equipment, customer load, and **grid stability**
- Must consider grid dynamics under **variety of operating conditions** across months of historical data

Examples of SVC Dynamics



This analysis requires working at a scale only made possible by PredictiveTMGrid

Data Center Oscillations



Challenge

A large utility experienced **subharmonic frequency oscillations** in an area with a **heavy data center presence**; multiple customers called to complain of lights flickering.

As data center load **economic growth is expected to exceed \$615B** over the next few years, minimizing impacts to their operations is critical.



Solution

Using the PredictiveGrid, the utility identified that a single data center was the source of the oscillations, and this was **determined in less than a day**.

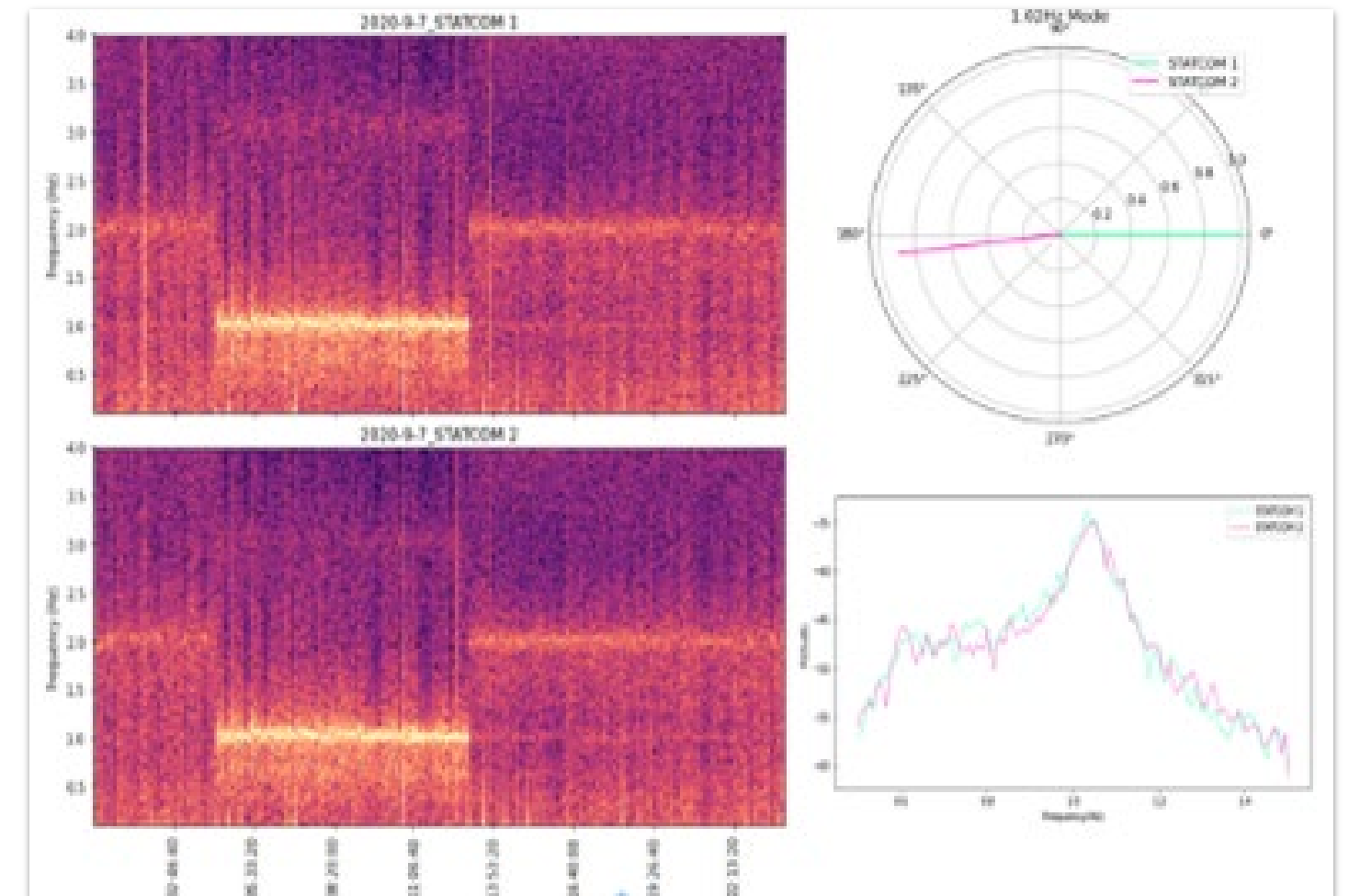
Precursor conditions were identified so that similar or more catastrophic, situations can be prevented in the future.



Value

\$328M
annually

Based on **lost revenue** due to reduced data center load growth.





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