# FERC ORDER 2222 & DER POLICY AND IMPLEMENTATION REPORT

March 2026



## CURRENT NEWS AND NEW DEVELOPMENTS

### *Summary of the latest developments in FERC Order 2222 and DER policy implementation*

FERC and several states have acted on distributed energy resource (DER) policy, the implementation of virtual power plants (VPPs), and FERC Order 2222 in the last several months. A summary of the actions is provided below.

*RTO/ISO Order 2222 Implementation:*

- PJM's Distributed Resources Subcommittee (DISRS) is in the process of updating its rules and procedures to accommodate DER aggregation per FERC Order 2222. Recent meetings have focused on updating and adding additional DER information to PJM's DR Hub tool. The DR Hub currently contains information on the demand response assets contained in demand response aggregations that participate in PJM wholesale markets. [LINK]

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*State FERC Order 2222 Implementation:*

- On Dec. 18, 2025, the Pennsylvania Public Utility Commission (PAPUC) voted to advance the development of a Notice of Proposed Rulemaking (NOPR) aimed at modernizing the Commission's electric interconnection regulations. The rulemaking will include a review of interconnection regulations, including how new electric loads, upgrades to existing loads, and distributed energy resources are connected to the distribution system. This rulemaking is separate from and does not replace the PUC's active proceeding addressing FERC Order 2222, but instead is intended to ensure that Pennsylvania's broader interconnection framework reflects current technologies, customer needs, and grid conditions. PAPUC Staff estimates that the NOPR will be published in the *Pennsylvania Bulletin* around April 11, with comments due within 60 days of publication and reply comments due within 90 days. [LINK]

*Other DER Policy Developments:*

- On Dec. 1, 2025, Virginia Electric and Power Company (Dominion Energy) filed an application with the State Corporation Commission for a virtual power plant (VPP) Pilot pursuant to the Community Energy Act, Va. Code § 56-585.1:16) which requires the Company to submit a pilot program to evaluate methods to optimize system demand through various technology applications and DERs, including the establishment of VPPs. Dominion is asking for approval within eight months of the filing so that they can launch the 18-month pilot program in Q1 2027. [LINK]
- On Jan. 8, 2026, S.B. 25 (Public Act 104-0458), the Clean and Reliable Grid Affordability Act, was signed into law in Illinois. This omnibus electric bill, effective Jun. 1, 2026, addresses a wide range of topics, including DERs. The new law requires utilities to create VPP programs that aggregate customer-side resources (smart thermostats, small batteries, rooftop and community solar, EVs) and pay participating customers for grid services during peak periods. [LINK]
- On Feb. 3, 2026, the New Jersey Board of Public Utilities issued an RFI in response to Governor Mikie Sherrill's Executive Order No. 2 (issued Jan. 20, 2026), which directed the Board to accelerate deployment of both distributed and utility-scale storage and to develop a VPP program to aggregate behind the meter resources. [LINK]
- On Mar. 2, 2026, the Maryland Public Service Commission issued an order instituting a new public conference, PC 77 (Case No. 9761), Demand Side Management (DSM) Programs, Rate Design Measures, and Distributed Energy Resource Integration in Coordination with the DRIVE Act, to be considered alongside the DRIVE Act and other relevant proceedings. The purpose of this public conference is to catalog the current state of DSM programs as well as rate design measures intended to influence customer load behavior, such as time-of-use rates. The Commission also directed utilities to provide proposals to increase participation in these programs and rates by August 2026. The Commission directed the utilities to offer new programs that would promote DERs and demand response. A hearing is scheduled for April 7-8, 2026, with comments due April 1.
- Subcommittees of the Wholesale and Retail Electric Quadrants of the North American Energy Standards Board (NAESB) continue NAESB's consideration of voluntary standards for a DER Entity Registry and a DER Device Registry. A conceptual paper describing the two registries received informal comment from industry and discussion at a March 13, 2026, subcommittee meeting. [LINK]

## KEY ISSUES ANALYSIS

### *Communications and Control for DERs*

In 1990, there were approximately 3,243 utility-owned generating plants in the United States. This very small number forced the electric industry to come together and develop the Common Information Model (CIM) as the industry transitioned to computer-aided systems for grid control and management of the power system. This transition rapidly pointed out the need for the CIM to reduce the cost of implementing software and their interfaces to share data as well as facilitate the necessity for collaboration among utilities to effectively maintain the reliability of the electric grid. (Attached to this report is a short introductory paper on CIM developed by Scott Coe.) Today, the industry is faced with millions of DERs being interconnected to the grid and creating significant challenges for utilities. While it is a much easier path for everyone to focus exclusively on their job, their business unit, or even their company, some issues drive the need for the entire industry to collaborate. Effective integration of DERs is an issue that must be addressed collaboratively and consistently, or the industry risks the reliability of the entire grid.

In our January 2026 report, we focused on the key issue of communications between DERAs and EDCs. In this report, we are focusing on what is being communicated and the necessary data standards required to allow for effective communications among stakeholders for DER information. DERs are becoming more pervasive on utility systems, and better data is required for the reliability coordinators to effectively manage the electric grid. This led FERC to issue order 901 requiring NERC to define information required for DERs to reliability planning in MOD 32-2.

#### *Utility Ontology – Action Needed*

When talking about data exchange, conversations often revolve around the form that the data takes. For example, it is not uncommon to hear debates around the benefits of moving from one data serialization format to another. But is the result of such a debate resolving the biggest issue in the electricity industry? The most important data challenges in the electricity industry data are often not related to technical encodings, packet sizes, or even security protocols but rather focused on the meaning of the data. The question the industry should be answering is how the electric industry can ensure that every message that is transmitted has the same meaning to both sender and receiver. How the industry sends that message, by carrier pigeon or an encrypted ICCP fiber path, is easily solved – but if the sender and receiver are not speaking the same language, appropriate communication is not occurring.

This shared understanding to enable effective communication requires an industry ontology. In the context of information technology, an ontology is a shared model to describe real-world objects, including features of those objects and relationships among those objects. A good ontology is very precise (meaning the features and relationships are extensive with consistent descriptions to explain them) and broad (meaning coverage across the business domain). The good news is that the electricity industry already uses such an ontology, the CIM. The bad news is that, while the CIM is both broad and highly precise, benefitting from decades of work from industry researchers, utility staff, and solution developers for application to the bulk power system, it lacks widespread adoption in distribution and customer segments. This lack of adoption for application to DERs means the industry cannot realize the full benefits of CIM.

When the CIM was originally developed in the 1990s to support the transition to digital systems for the bulk power system, the transition to CIM was much simpler as there was a limited number of components required in the CIM. While the bulk power system has evolved over the decades, changes on the "grid edge" have been more much more significant. Utilities must now understand, at least to some limited level, the ways that customers are using, and in many cases, producing electricity. Striking the right balance between full information exchange and a more reliable grid versus total privacy for the customer and a less reliable grid is a topic of much debate.

In Europe, the regulatory framework including both the General Data Protection Regulation (GDPR) [LINK] GDPR and the Data Act [LINK] creates strong pressure for interoperable, semantically consistent energy data exchange. Although these laws are technology-neutral, organizations all across Europe increasingly rely on CIM as a reference information model, which in practice positions it as a leading candidate for a common semantic framework for grid and market data. The Common Grid Model Exchanges Standards (CGMES) in Europe has achieved a level of interoperability almost unimaginable here in the States. Each Transmission System Operator (TSO) publishes a CIM-based grid model at different timeframes — year-ahead, day-ahead, and even intra-day — that includes not only all the equipment definitions with connectivity, but also load and generation levels, voltage levels, and current flows. These individual representations are "assembled" by each Regional Coordination Centre (RCC) into larger models that provide wide area visibility and improved planning and operational coordination.

Because the CIM is designed to manage any network topology (e.g., networks, radial, or looped) and any voltage level, not only can it be used to connect representations of grid "horizontally" as described by CGMES, but also "vertically" across voltages. Leaders in this area are clearly regulators in the United Kingdom who require each Distribution Network Operator (DNO) to publish information on its grid. With the ability to import these data into analysis tools, software solutions can more easily model the best locations to propose new loads, new generation facilities, and new energy storage resources. And with each grid representation available down to 11 kV, the National Energy System Operator (NESO) is able to achieve visibility into the distribution system, which is playing a larger role in maintaining reliability of the bulk power system.

Unfortunately, in the United States we do not have a single body that speaks on behalf of the bulk power system, although the market operators do cooperate and are subject to FERC and NERC oversight. The distribution side of the grid equation in the US is much more fragmented with thousands of utilities all with a variety of appropriate regulatory authorities depending on if they are an investor-owned utility, a rural electric cooperative, a municipal utility, or other governmental utility entity. There is no single organization that is coordinating the activities across distribution utilities, although there are organizations like EEI, NRECA, APPA, and NAESB that are playing a role in at least some aspects of common perspectives. Without a "top-down" push, the industry is left with the more challenging task of educating individual grid operators of the benefits of a common ontology and moving the industry through convincing arguments to adoption of the CIM data structures. This task is progressing more effectively in recent years as the US Department of Energy has funded multiple projects that leverage CIM at National Laboratory of the Rockies (NLR), Oak Ridge National Labl (ORNL), and Pacific Northwest National Laboratory (PNNL) in addition to a number of activities leveraging CIM from EPRI to other events hosted by the CIM user community.

> *Adopting the CIM as a corporate ontology at an electricity utility is not "merely an information technology issue." Rather, such a transformation can benefit nearly every department in a utility to both significantly reduce cost and improve efficiency, especially around data quality.*

Utility executives can take the following actions for a more effective understanding of CIM, thus better preparing their companies for a surge of DERs being added to their electrical power systems:

1. Sign up for webinars and other events hosted by the national labs, EPRI, and the CIM User Group.
2. Ensure that the department in the utility focused on data standards (Data Governance, Enterprise Architecture, Digital Transformation, etc.) is aware of the CIM.
3. Query staff about the quality of the data throughout the organization and focus initial considerations in those areas with the most time spent resolving data issues or where costs are the highest to create customer data interfaces between all of the different utility systems.
4. Join the CIM User Group; there are several remote sessions every week on various areas of the CIM and quarterly in-person sessions hosted alternately in North American and in Europe. More information can be found at the CIM User Group website [LINK].

### *Summary*

While DERs play a relatively minor role in the grid today, increasing numbers of embedded renewables, customer-sited storage, and electric vehicles with vehicle-to-grid capabilities means that the distribution grid will play a more instrumental role in bulk power system reliability. Those responsible for planning for a stable grid of the future will need more details about distribution system capabilities, and collecting this data is virtually impossible when there are thousands of individual utilities tracking details using their own tools, and importantly, using data definitions that are not precise and are completely unharmonized.

The cost to the electric industry, without the use of a common ontology such as CIM, is estimated in the billions of dollars just to try and share the required data between all stakeholders. As complexity of aggregation by utilities or third parties increases and FERC Order 2222 is implemented allowing aggregations to bid into wholesale markets or utility retail programs, these costs will continue to exponentially increase unless there is collaboration in the electricity industry to adopt a common ontology. The great news is the standards organizations the industry consistently relies on have already created and certified this ontology for DERs. The IEC DER CIM is available, published and already implemented in the European market.

The challenge being faced in the United States is the fragmentation of the electric industry and its ability to collaborate effectively together to eliminate billions of dollars of cost as the industry begins to more effectively incorporate DERs into the electric grid. The electric industry needs to collaborate once again and face this challenge together.

For more information about CIM, read the Introduction to the Electricity Industry Common Information Model [LINK]. Follow the link or refer to the Appendix at the end of this report.

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## TRACKER TIPS AND HIGHLIGHTS

The Policy Tracker is available to the public at FERC2222.org[LINK]. If you would like to recommend content for the Tracker or provide feedback, please contact us.

The Policy Tracker allows users to filter and search for content within a database of content pertaining to DER Policy, with emphasis on the implementation of FERC Order 2222. The keyword search functionality includes review of the source documents within the database, while the filters allow users to narrow their searches based on issue topic, organization, and state.

For tips on how to use the Policy Tracker search and filter function, see the Tips and Tricks section of the November Report [LINK].

Recordings and slide decks from all previous bi-monthly webinars can be viewed on the Library page [LINK]. If you are unable to view a webinar recording due to network restrictions please contact us and we will provide access to the recordings directly. The Library is also a great resource for important information regarding DER Policy, standards, and background information relevant to FERC Order 2222.

## *Upcoming Webinar*

Join our next webinar will be on Thursday, April 23rd [LINK]. We'll dive into the Key Issues Analysis from this report, focusing on **Communications & Controls for DERs**. Have questions or insights on this topic or on broader developments related to FERC Order 2222? We'd love for you to join the discussion and share your perspective!

## DISCLAIMER

## APPENDIX

*Introduction to the Electricity Industry Common Information Model (CIM)*

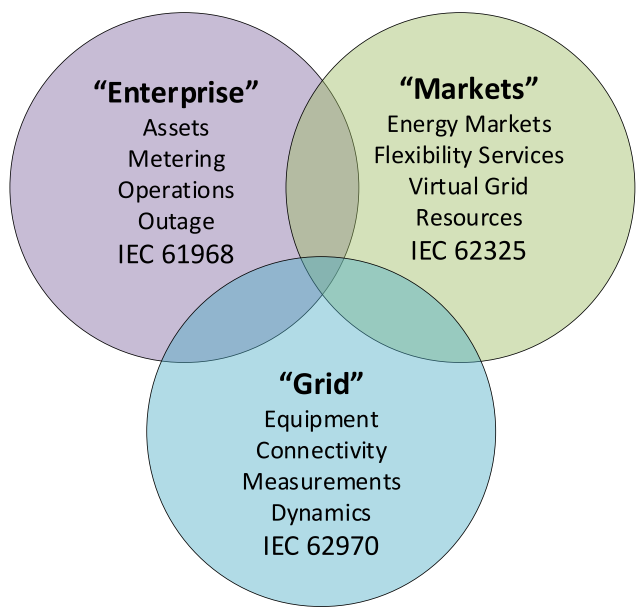
# The Best Technology You Never Knew About

## Introduction

Over the past decade or two, millions of dollars have been spent by electric utilities to develop corporate business-level data glossaries and more technically focused data dictionaries. But very few of the projects charged with developing such tools investigated the completely free, open-source electric utility data known as the Common Information Model, or CIM. The CIM was developed by electricity industry experts for use by the electricity industry, and covers data used from the largest investor-owned utility to the smallest rural cooperative, representing data related to generation, transmission, distribution and, yes, even distribution-connected customer energy devices.

The CIM is expressed in Unified Modeling Language (UML) and can represent over 2,000 different utility data objects. Each object is represented by a UML class and has a well-defined definition along with typically multiple data attributes and several relationships to other objects. The model is hierarchical, with some objects being specializations of other objects. For example, a “switch” is one of the CIM classes which is further specialized into fuses, jumpers, reclosers, breakers, and so on. All switches have common attributes including rated current, a normal position, and a position at the present time. Specialized classes add other elements, for example the breaker has a breaking capacity and an in-transit time. All attributes have well-defined types with explicit units-of-measure in avoiding the possibility of misinterpreting the data for each instance of the object.

The ability to create a representation of the power grid was the motivation behind the original CIM development work and the core of many interoperability successes around the world. Because each element of any power system can be represented by one of these objects and because each object has associated terminal objects, the entire power grid can be logically assembled into a networked set of data. With such data as a foundation, any power grid can be described and used as the basis for many internal software solutions, such as planning analysis simulators and real-time grid management tools.

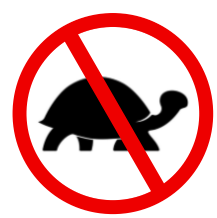



Building upon the grid representation library (which practitioners call the “Grid Package”), an entire library of objects has been established to track the day-to-day operations of an electric utility. The scope of the section of the CIM, entitled the “Enterprise Package” cover many functions across the utility including customer information management, metering and payment, asset management, planned and unplanned outage management, switching operations, and work management. While representations in the Grid Package are often long-lived, for example a switch object might remain unchanged for years, the data in the Enterprise Package is much more dynamic. Tracking individual transactions among utility systems, all with unique identifiers, allows for data correlation and orchestration.

The third section of the CIM was developed to support wholesale electricity markets and was named the "Markets Package," accordingly. Here market transactions like bids and offers, clearing results, dispatches, and settlement information are all modeled to support energy, capacity, and Essential Reliability Service[1] markets. This modelling also includes the concept of locational marginal pricing and, not surprisingly, ties directly to the "Grid Package" described above so that financial transactions can be aligned with the physics of the power system. This illustrates the point that while there are different sections of the CIM, the model itself is a monolith, allowing the users to select elements across the packages without restriction. To avoid the risk of this article delving into the details of the CIM, it is helpful to point those interested in such details to the "Common Information Model Primer"[2], an excellent guide to understanding the CIM which maintained and published at no cost by EPRI.

## A Case Against CIM?

The business case for CIM has existed for decades. But for those who have been developing and proselytizing its use there are common excuses which are often raised as weaknesses. The IT manager might say "standards are too rigid and slow," the grid planner might say "my grid is unique and would never fit into the CIM", and the management consultant might note in a million-dollar study that, "adopting the CIM is too expensive". While all of these have some kernel of truth (standards can be rigid, grids do have unique features, and there is a cost to any change), none of them is defensible.



**Standards Are Slow and Rigid.** Yes, it takes months – sometimes years – to develop standards and gain international approval. And yes, the CIM has a set of international standards; but the underlying CIM model is open-source and can be used for a variety of uses without needed to wait for that process to play out. In fact, this is the recommended approach to using CIM. First one starts with the problem which needs a common approach, for example describing asset characteristics to populate an asset management system. The implementer can use elements of the CIM to make her own implementation inside the utility. And as more and more utilities find the same need, then – and only then – does one create the standard and start to move the industry to implement the standard. Standards exist for common "use cases" of the CIM. IEC 61970[3] standards implement standard exchanges for the Grid Package, IEC 61968[4] for the Enterprise Package, and IEC

[1] https://www.nerc.com/pa/RAPA/ra/Reliability Assessments DL/ERS Abstract Report Final.pdf
[2] https://www.epri.com/research/products/000000003002029927
[3] https://webstore.iec.ch/en/publication/61167
[4] https://webstore.iec.ch/en/publication/32542

62525[5] for the Markets package. If one has a common need and/or has a vendor who has a multi-national product, chances are there is already a CIM "profile" ready and available from the IEC.

**Every Grid is Unique.** Primarily based on the customer base (urban, suburban, rural, etc.) there are different ways to construct grids (networked, radial, looped, etc). Plus, there are many different topologies that can be implemented inside substations, often balancing cost against reliability. Finally, more often than one might like to admit, utilities implement different terminologies and different processes for things that are quite similar across all utilities. All of these variations can be modelled since the CIM has the individual elements available in the library and it is up to the user at each utility to map them to their terminologies (or update their non-standard terminology). As for differences in the physical grids themselves, the modeler can connect the virtual data elements together as they are connected in the real world.

**The CIM is Expensive.** Change is costly. And radical change can be extremely costly. This is why those who have implemented CIM often recommend a gradual implementation. Implemented CIM on specific interfaces during system upgrades is often the best approach. Have a new outage management system coming in? Ask the vendor to implement a CIM interface to publish the outages. These interfaces might already be in the chosen vendor's platform and then one only need to build an adapter or update the subscribing systems. Over time implementing CIM interface-by-interface the entire enterprise can be standardized in perhaps a decade, with the error-prone, unreliable interfaces the target in the short term.

## A New Case For CIM

The number of wholesale market operators in the United States is small. There are seven. These organizations could have adopted CIM when they were established under FERC jurisdiction or at any time after; but they have not. In fact, a cottage industry began to flourish in the 2000s where vendors would build standard interfaces to each market operator so that participants in multiple markets did not have to manage the frequent user interfaces and data format changes across multiple regions. But a few success stories exist in this domain, most notable at ERCOT, where a CIM-based model exchange process was established with its transmission-owning members.

The number of transmission utilities is larger and varies depending on how the count is performed, but it is safe to estimate this number in the several hundred range. Again, these companies could have adopted CIM for internal benefit, especially as the age of mergers and acquisitions has collapsed the numbers. But only a few have made the transition, such as AEP, which has embraced CIM leveraging Siemens solutions.[6] Other transmission utilities have begun to consider the CIM for their internal processing, especially since the benefits have been clearly documented by EPRI outlining the need for a central Network Model Manager (NMM) tool to be deployed inside each transmission utility.[7]

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[5] https://webstore.iec.ch/en/publication/31487
[6] https://assets.new.siemens.com/siemens/assets/api/aep-casestudy-intl-version.pdf
[7] https://www.epri.com/research/products/3002003053

The industry has been slow, at times hostile, towards moving away from proprietary, vendor-defined interfaces both among systems inside their utilities and between systems among utilities; but there is a an even more compelling case to implement the CIM at distribution.

The number of distribution utilities is large. While there are less than 200 investor-owned utilities serving the majority of electricity customers in the United States, EIA reports[8] nearly 800 customer-owned utilities (generally cooperatives) and over 2,000 government-owned utilities (generally municipal utilities). Focusing on the Grid package, there are many different stakeholders who currently would like some of the data from these utilities. It is hard to argue that this demand will only grow. Example of entities include:

- **Bulk Power System Operators** to improve system planning studies, optimize short-term and long-term outage planning, and improve the reliability of system operations including congestion management.
- **Electricity Market Operators** to enable the coordination of services at both transmission and distribution to support FERC Order 2222 and improve market forecast for distribution-connected resources.
- **External Stakeholders** to perform wide-areas studies across regions as well as explore the impacts of new technologies on the costs of energy and the levels of reliability and to streamline interconnection processing for proposed developments.

It is difficult to envision how any of these can be achieved without a standard representation of distribution grids and the only real option for delivering standards representations is using the CIM.

Clearly, it would be difficult to have a standard representation of distribution grids without the use of the robust, consensus-based information model like the CIM. To illustrate how it could be used, it is helpful to look to the Common Grid Model Exchange Standard (CGMES). CGMES is a subset of the IEC 61970 series and has facilitated the publication of grid models in Europe starting in 2009. The roughly 40 transmission operators across Europe publish their models to their respective Regional Security Coordinator (RSC) each hour, not only with the grid topology, but also with current state information like energy flows and outages. Each RCS, in turn, assembles the individual grid models into a regional model to perform contingency analysis, calculate capacity values, coordinate outages, and assess resource adequacy.

The CGMES example support the publication of transmissions, but concepts are similar for distribution- models as well, especially with clear guidance on how to create an equivalent model available from the NERC[9] when those distribution models need to be connected to transmission models. Until recently, unbalanced models for the low-voltage networks were not fully supported by the CIM; however, recent focused effort in the past including from EPRI and the National

[8] https://www.eia.gov/electricity/data/eia861/zip/f8612023.zip

[9] https://www.nerc.com/comm/RSTC_Reliability_Guidelines/Reliability_Guideline_DER_A_Parameterization.pdf

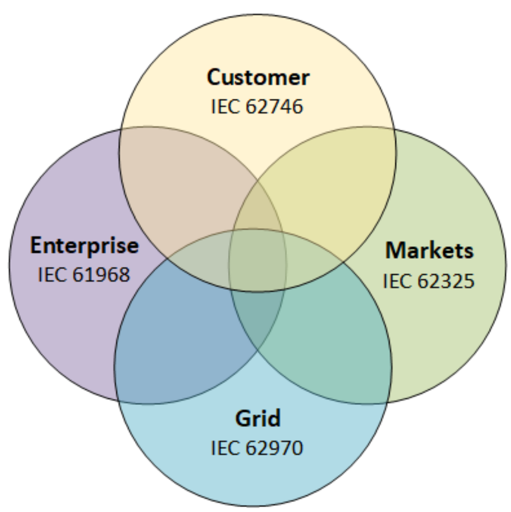
Laboratories, means that support is available in the next edition of the CIM and in the process of being vetted by vendors.[10]

## Looking Ahead

The future power system looks radically different from today with the majority of the bulk power coming from intermittent renewable resources connected to the grid and offset by large amounts of local power production from smaller installations. While this alone is a radical change, the ever-increasing need for grid support services to keep such a chaotic system in balance means that grid services – especially grid services supplied by distribution-connected customer-owned devices is essential. Supplementing the support for low-voltage, unbalanced networks in the Grid Package, there are equally revolutionary improvements in the Enterprise and Market Packages.

The Enterprise package has a robust methodology for tracking what is known as "data sheet" information. This data encapsulates the manufacturer-supplied capabilities of any given device, such as the voltage at which the device can be operated and the maximum current the device can transmit. Historically used to support traditional assessment management functions for utility-owned equipment including transmission and distribution lines, transformers, and switches – the same approach is not available to be used to track commercial devices, like solar inverters, stationary batteries, and smart electric vehicle charging. This model becomes the hub of device registry that each distribution utility must keep understanding how the power system will react to different conditions, including the behavior of the customers operating those devices, which is a function of things like weather but also more difficult to model, like the driving patterns of an individual electric vehicle owner.

Finally, for the devices which can provide distribution grid services like local congestion management, the Market Package has been updated with all of the features needed to extend the existing wholesale market concepts to those of the virtual power plant. Since the CIM already supports demand response resources for wholesale markets which are often comprised of very small customer-owned devices not tracked by the utility, the support of local flexibility markets like those already a reality in Europe, is available. Furthermore, the need to model the operational modes and response to abnormal system conditions for inverter-based resources, as defined by IEEE 1547[11], is also embedded in the CIM.




Thus distribution-connected, customer-owned energy devices from batteries and solar inverters tracked by the utility to devices like thermostats and smart water heaters which can provide services when aggregated into a virtual power plant have all three legs. (1) The device models are available in the Enterprise Package. (2) They are mappable – when deemed important

[10] https://www.epri.com/research/products/000000003002027444
[11] https://standards.ieee.org/ieee/1547/5915/

enough to be track by the utility – to physical representations in the Grid Package. And (3) When supplying services – either alone or as an aggregation – the Market Package provides the market perspective to track the economic transactions. Given the importance of this new era in power grid, a new series of CIM data exchange standards was launched to cover interfaces to the customer as the IEC 62746 series and in November of 2024, the first set of message profiles were published entitled "IEC 62746-4: Demand Side Resource Interface"[12].

[12] https://webstore.iec.ch/en/publication/78336