ppdm
The Global Energy
Data Professionals

What is A Facility

PPDM Association is the not for profit, global society that enables the development of data professionals, engages them in community, and endorses a collective body of knowledge for data capability across the energy and natural resources industry.

Energy standards and best practices also available:

Data Objects

Rules

Reference Values

and more...

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About the PPDM Association

Introduction

Technology advances have made it possible to improve the energy industry's productivity, efficiency, and social credibility. Business paradigm transformations, driven by climate change and environmental accountability concerns, engage the industry in the boardroom, in the field, and courtroom alike.

Demands for trusted, integrated, reliable, and accessible data to fuel industry transformation recognize data's place as a critical strategic asset. This urgent need for "good" data drives demand for competent and capable data professionals who are supported by a powerful foundation of data standards and professional development.

With a 30-year history of delivering industry-leading standards and professional development, the PPDM Association is uniquely positioned to be at the forefront of development. The PPDM Association works with our hundreds of volunteers on our Council of Chairs, committees, and work groups to develop three primary pillars that support data capability.

A globally connected (1) Data Community works collaboratively to develop (2) Data Resources that drive data's strategic usefulness and interoperability. The competency and capability of (3) Data Professionals is developed and verified, ensuring access to qualified, portable experts. These experts steward data as a strategic asset that supports both the immediate and long-term needs of industry across the energy spectrum.

Each of the three PPDM Association Pillars is grounded in member driven program families that support data systems that are accessible, trusted, and ready to use.

PPDM Association methodology is grounded in "The PPDM Way," described at ppdm.org/ThePPDMWay.

Our Vision

PPDM Association is the not for profit, global society that enables the development of data professionals, engages them in community, and endorses a collective body of knowledge for data capability across the energy and natural resources industry.

Our Commitment

The PPDM Association will continue to serve data management and business workflows that support a responsible and efficient energy industry including the growth into renewable energy.

Our Future

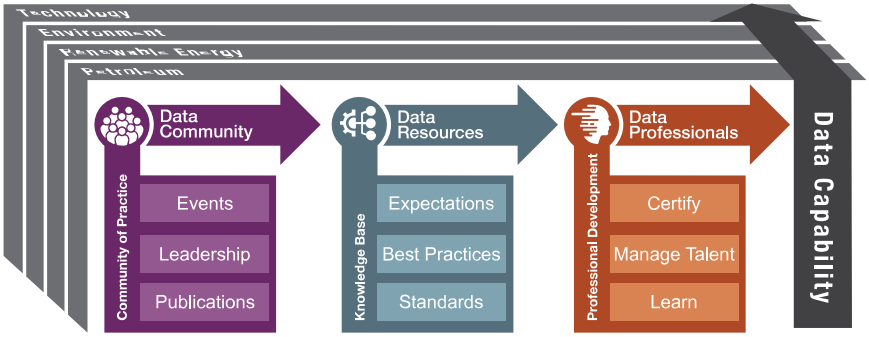
As the energy industry transforms, the PPDM Association's members and core strengths position us to ensure that the necessary foundation for data is in place. The PPDM Association will leverage and continue to nurture the petroleum industry, while expanding our scope and remit to include new energy, environment, and technology, accelerating development in these new areas with our experience and knowledge.

Our Strategies

The PPDM Association strives to develop, define, and align our programs and services to be consistent with the evolving trends and requirements across the energy and natural resource industry and its data professionals.

Our Methods

The PPDM Association works with our Council of Chairs, committees, and work groups to bring together plans specific to each objective. Through member engagement, goals and objectives are tested to ensure that they help resolve current business challenges in the energy spectrum and proactively lead efforts based on trends faced by industry today and into the future.



Faceted Taxonomy

One approach to creating useful reference lists is to assemble various relevant properties into a logical set as has been done in "What is a Facility." The set is a faceted taxonomy, and each list is one facet in the taxonomy.

Each facet is constructed according to some simple rules:

- Each facet describes one property of an object or description, and therefore contains only one kind of information.
- The facets work together to tell a complete story about a facility and its components from multiple points of view.
- The values in each facet should be mutually exclusive with values in other facets of the taxonomy.
- Values in a facet may be hierarchical. Users should be able to select at any level of the hierarchy that is relevant to their purpose. Data retrieval or reporting may leverage the hierarchies.
- Unambiguous criteria must be used for the selection of any facet value. If more than one value may be appropriate to a business purpose, the business rules for selection should be reviewed, or the design of the facet may be flawed. Local criteria may be used to choose the best level in the case of a hierarchal facet.

A faceted taxonomy offers some powerful functionality:

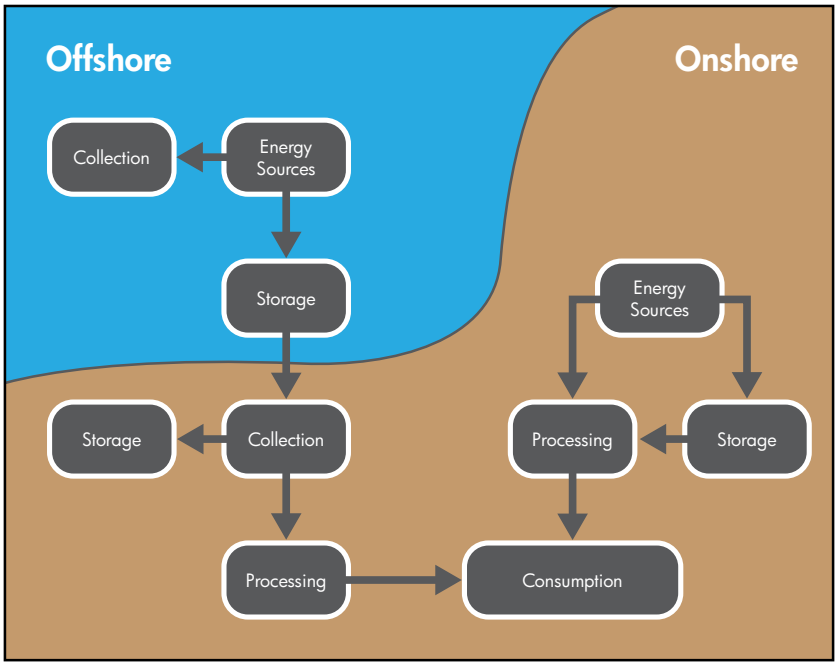
- Objects can be retrieved from one or more datasets according to their value in a single facet.
- By combining information from many facets, users can group objects for many business purposes.
- A properly constructed set of facets allows rapid retrieval of data objects according to criteria that are familiar to users, without requiring complex queries or knowledge of the data structure. While this information is derivable from a good data store, facets can be helpful shortcuts.
- Facets can be used to develop symbol sets or dashboard displays as appropriate.

What is a Facility

This faceted taxonomy was created by the PPDM Association to deal with the multitude of values describing facilities in the global energy industry. This is an evolving product, responding to changes in corporate data management needs and practices plus external reporting. Regulatory and ESG reporting require data arranged for a facility. A common language and data standard is vital for consistent reporting, analysis, decision-making, and interpretation for operators and external stakeholders.

Definition

A facility is the collection of commonly owned or operated equipment at any life cycle stage that is located within a specific geographic boundary or surface site for the purpose of production, processing, transmission, storage, or distribution of products prior to the point of custody transfer.



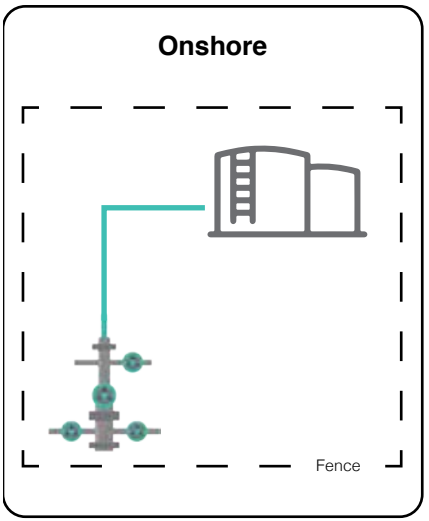
Location

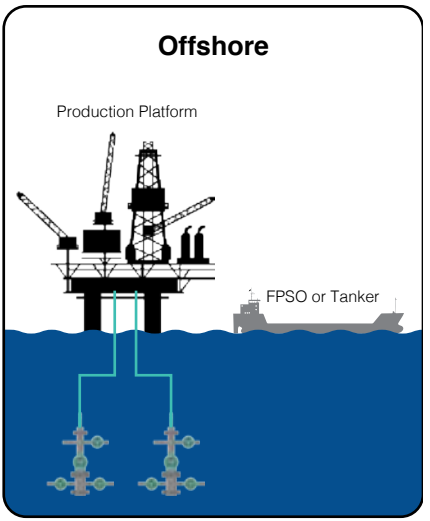
Definition

The spatial area on, above, or below the surface of the earth that defines the external perimeter where the activities of the facility take place.

Related Terms:

- Acreage
- Biomass Store
- Building
- Drilling Platform
- Energy Storage Facility
- Generator Station
- Geothermal Plant
- Hydro Turbines
- Hydrogen Electrolyzer Plant
- Installation
- Landfill
- Lease
- Liquification Terminal
- Moveable or Temporary Building
- Nuclear Power Station (Spent Fuel Storage)
- Pipeline and other Linear Systems
- Plant
- Platform
- Power Plant
- Property
- Reservoir for Storing Water / Gravitational Potential Energy
- Seabed
- Server Farm (Computing)
- Site
- Solar Plant
- Storage
- Structure
- Subsurface Storage Facility (Salt Domes)
- Tidal Barrage
- Transport Vessels
- Wave Energy Transformation (Water)
- Wind Farm





Clarification:

Proximity/Adjacent Facilities: From a data and/or communication concept, multiple facilities may be grouped together and considered as a single facility. For example, two offshore facilities that would generally be considered separate facilities by an Operator may be required to file a single report for environmental regulation purposes. In the UK, an offshore facility includes the installation in water or "any waters within 500 meters of any such installation." (UK Petroleum Act of 1998. Part II, Section 10)

Norwegian regulation excludes "supply and support vessels or ships that transport petroleum in bulk" from the facility definition. However, "Ships used for storage of petroleum in conjunction with production facilities are regarded as part of the facility" and "…ships for transport of petroleum during the time when loading" (Act 29 November 1996 No. 72 Relating to Petroleum Activities, Norway, amended June 2011. Legislation)

Australian regulation also excludes "off-take tankers," "tugs or anchor handling vessels," and "vessels used for supplying facilities or for traveling to or from a facility" from the facility definition. However, "equipment by which petroleum processed or stored at the vessel or structures is recovered" is part of the facility. (Australia Commonwealth Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act), Clause 4 of Schedule 3.)

Business Associate

Definition:

The entity responsible for a given regulatory or operational obligations of a facility.

Related Terms:

- Authorized Representative
- Company (Person, Consortium)
- Contract Suppliers
- Joint Venture Partners
- Lessee
- Lessor
- Operator
- Owner
- Product Consumer
- Responsible Official
- Working Interest Participant

Clarification:

From the PPDM Data Model (https://docs.ppdm.org/BUSINESS_ASSOCIATES)

Definition: A PPDM business associate may be a company, person, consortium, or regulatory body such as a jurisdiction, agency, or government department. Details such as addresses, services provided, names and name changes or acquisition history are accommodated.

Purpose: Business Associates are involved in every business process and transaction. Detailed descriptive meta data about who you are doing business with adds value to the information you keep. Effectively managing business associate information also can help you ensure that your legal obligations are properly tracked and managed.

Alternative definitions:
"A person in whom the installation is vested, and a lessee and any person occupying or controlling the installation." (UK Petroleum Act of 1998)

"Owner means any person who has legal or equitable title to, has a leasehold interest in, or control of a facility or supplier, except a person whose legal or equitable title to or leasehold interest in the facility or supplier arises solely because the person is a limited partner in a partnership that has legal or equitable title to, has a leasehold interest in, or control of the facility or supplier shall not be considered an "owner" of the facility or supplier." "Operator means any person who operates or supervises a facility or supplier." (USEPA 40 CFR 98 Subpart A)

In lieu of owner, Alberta Energy Regulator uses "working interest participant" means a person who owns a beneficial or legal undivided interest in a well or facility under agreements that pertain to the ownership of that well or facility."

"Operator… means a person who:

(i) has control of or undertakes the day-to-day operations and activities at a well or facility, or

(ii) keeps records and submits production reports for a well or facility to the Regulator, whether or not that person is also the licensee or approval holder in respect of the well or facility." (Alberta Energy Regulator, Oil & Gas Conservation Act, Chapter O-6.)

Life Cycle

Definition:

The collection of activities and conditions that are grouped according to their significance to the operations of a facility.

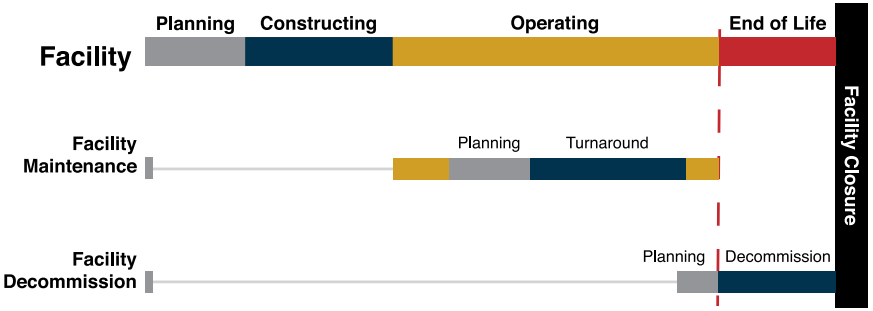
Related Terms:

- Life Cycle Phase
- Life Cycle Status
- Refer to stages and definition from IOGP's Asset Lifecycle Management, ISO 55000, API, or some other governing body

Clarification:

The life cycle of a facility is comprised of life cycle phases, which are further defined by operating statuses. The operating status of individual equipment contained within the facility may not align with the overall operating status of the greater facility. However, the overall grouping of operating statuses of the underlying equipment within the facility determines the greater operating status (and therefore life cycle phase) of the facility.

Life Cycle Phases



Business Intention

Definition:

The single priority of a facility at any point in its life cycle.

Related Terms:

- Activities
- Business Purpose
- Industry Sector (Category, Segment)

Clarification:

Purpose is the intention of the current operation of the facility. The purpose can change over the life cycle of the facility.

Sector	Industry Segment	Industry Category
Upstream	Production	Production, Onshore Petroleum and Natural Gas
		Production, Offshore Petroleum and Natural Gas
Midstream	Processing	Gas Processing
		Gathering & Boosting
		Natural Gas Liquids (NGL) Supply
	Natural Gas Transmission and Storage	Transmission Compressor Stations
		Underground Storage
		LNG Storage
		LNG Import/Export Equipment
		Natural Gas Transmission Pipeline
		Oil Transmission Pipeline
		Refined Product Pipeline
	Distribution	Natural Gas Distribution
		Natural Gas Local Distribution Company (LDC) Distribution
	Liquid Products Pipeline	Pipeline
Downstream	Processing and Refining	Refinery

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Sector	Industry Segment	Industry Category
Energy	Coal	Mining
Renewables	Biomass	Power Generation
	Geothermal	Electric Power Generation
	Hydroelectric	Electric Power Generation
	Hydrogen	Energy Carrier
	Nuclear	Electric Power Generation
	Solar	Electric Power Generation
	Tidal	Electric Power Generation
	Wave	Electric Power Generation
	Wind	Electric Power Generation
CO2	CO2 Capture	Post Combustion
	CO2 Capture	Direct Air Capture
	CO2 Transportation	Pipeline, Ship, Rail, Truck
	CO2 Storage	Geological Storage
Energy Storage	Battery	Electric Power Generation
	Mechanical	Electric Power Generation
	Molten salt	Electric Power Generation
	Pumped water	Electric Power Generation

Product

Definition:

The materials and substances that enter into, are created, are contained within, or exit a facility as a part of fulfilling its purpose.

Related Terms:

- Product Significance
- Product Type
- Production Stream

Clarification:

The product is a naturally occurring mixture or processed derivative of hydrocarbon and non-hydrocarbon gases and liquids found in geologic formations beneath the earth's surface, of which its constituents include, but are not limited to hydrogen, methane, carbon dioxide, water, condensate, and heavier hydrocarbons. - 40 CFR 98.238

The product can also be electrical power generated at the facility. The power can be used locally, for example to produce hydrogen or power computer servers, or used elsewhere via the electrical grid.

Incoming fluids or materials in support of the facility purpose are not covered by the term "product." For example, gasoline to fill a generator would not be considered a "product" under current intention and usage.

The "product" should be those substances that are subject to some sort of operation by the facility; something is being done to that product rather than with that product.

Products are either sent to the sales line, sent to processing, vented, flared, or disposed. Substances used in the extraction or processing of product streams should not be considered "product."

The existence of a facility does not rely on the presence of a product.

Product Type

Facet Value	Facet Value Definition	
Gas	A Gas Product Type is a substance that exists in a non-solid or non-liquid state under normal temperatures and pressures. It possesses perfect molecular mobility and the property of indefinite expansion and is lighter than oil or water.	
	Qualifier	**Comment**
	Methane	Methane (CH4) is the lightest of the hydrocarbon gases.
	Ethane	Ethane (C2H6) is a hydrocarbon gas.
	Ethane Plus	Ethane Plus is a mixture of ethane and higher molecular weight hydrocarbon gases, also known as C2+.
	Propane	Propane (C3H8) is a hydrocarbon gas.
	Butane	Butane (C4H10) is a hydrocarbon gas.
	Pentane	Pentane (C5H12) is a hydrocarbon gas.
	Pentanes Plus	Pentanes Plus is a mixture of pentanes and higher molecular weight hydrocarbon gases, also known as C5+.
	Gas Condensate	Condensate is a natural gas mixture that exists in a liquid state with a low vapor pressure compared with liquid petroleum gas (LPG). Condensate is mainly composed of propane, butane, pentane and heavier hydrocarbon fractions.
	Liquid Petroleum Gas	Liquid Petroleum Gas (LPG) is a natural gas mixture composed of mainly ethane, propane, and butanes, with small amounts of pentanes plus (C5+) in any combination. The fluid is usually gaseous under atmospheric conditions but becomes a liquid under pressure.
	Acid Gas	Acid Gas is a poisonous and corrosive gas mixture consisting of hydrogen sulfide and carbon dioxide in varying concentrations.
Geothermal	Geothermal Product Types are naturally heated fluids. They may be steam or hot water, and may contain salts, minerals, or other dissolved substances.	

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Facet Value	Facet Value Definition	
Greenhouse Gases	Emissions that contribute to the atmospheric greenhouse effect and are regulated in oil and gas operations. Overview of Greenhouse Gases | US EPA)	
	Qualifier	**Comment**
	Carbon dioxide	Carbon dioxide (CO2) enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and other biological materials, and also as a result of certain chemical reactions
	Methane	Methane (CH4) is emitted during the production and transport of coal, natural gas, and oil.
	Nitrous oxide	Nitrous oxide (N2O) is emitted during agricultural, land use, and industrial activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.
	Fluorinated gases	Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride are synthetic, powerful greenhouse gases that are emitted from a variety of household, commercial, and industrial applications and processes.
Mineral	Mineral Product Types are nonhydrocarbon inorganic solids dissolved or carried in a fluid obtained from well operations.	
	Qualifier	**Comment**
	Lithium	Lithium is a chemical element. It may be extracted from oil and water.
	Magnesium	Magnesium is a chemical element. It may be extracted from oil and water.
	Potash	Potash is a general name for potassium-bearing salts. Potash may be extracted by using hot water to dissolve the potash and bring it to the surface through wells.
	Mineral Salts	Mineral Salts include a broad range of ionic compounds that are made up of two groups of oppositely charged ions. Salts may be soluble in oil well fluids and are extracted during processing.
	Sulfur	Sulfur is a non-metallic element that can be extracted from Hydrogen Sulfide gas (H2S).
	Uranium	Uranium is the chemical element of atomic number 92, a gray, dense radioactive metal.

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Facet Value	Facet Value Definition	
Non-hydrocarbon Gas	The Non-hydrocarbon Gas Product Type is gas that does not contain hydrocarbons. It is generally not flammable. If the composition of the gas is not known, do not use the qualifier facet.	
	Qualifier	**Comment**
	Air	Air is a mixture of colourless, tasteless, invisible gases that surround the earth and are composed of mainly nitrogen and oxygen molecules.
	Carbon Dioxide	Carbon Dioxide (C02) is a pure gaseous or liquid compound chemically composed of 1 carbon atom and 2 oxygen atoms.
	Hydrogen Sulfide	Hydrogen Sulfide (H2S) is a colorless, transparent gas with a characteristic rotten-egg odor at low concentrations and not detectable by odor at higher concentrations. H2S is toxic at very low concentration.
	Helium	Helium (He) is a colorless, odorless, tasteless, non-toxic, inert monatomic gas produced as a by-product in certain oil and gas reservoirs.
	Hydrogen	Hydrogen is the lightest and most abundant chemical element.
	Nitrogen	Nitrogen, used in various well treatments, is a colorless, odorless, tasteless and mostly inert diatomic gas at standard conditions.
	Oxygen	Oxygen (O2) is a colorless, odorless, tasteless diatomic gas.
Oil	An Oil Product Type is a mixture of hydrocarbon substances that occurs as a viscous liquid. It is extracted by wells or mining and processed into fuels, lubricants, chemicals, etc.	
	Qualifier	**Comment**
	Fine Light	Fine Light oil is crude oil with an API gravity > 45.0.
	Premium Light	Premium Light oil is crude oil with an API gravity > 39.9 and < 45.1.
	Light	Light oil is crude oil with an API gravity > 31.1 and < 40.0.
	Medium	Medium oil is crude oil with an API gravity > 22.2 and < 31.2.
	Heavy	Heavy oil is crude oil with an API gravity > 9.9 and < 22.3.
	Bitumen	Bitumen is crude oil with an API gravity < 10.0.
	Naphtha	Naphtha is a colourless and highly volatile, flammable liquid hydrocarbon intermediate product between gasoline and benzene formed from the distillation of crude oil. **Clarification:** Naphtha is used as a solvent, fuel, etc.

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Facet Value	Facet Value Definition
Steam	The Steam Product Type is water in the gas phase.
Water	The Water Product Type is a chemical substance of hydrogen and oxygen (H2O). In common usage, water is the liquid phase. Water is denser than oil or gas.

Qualifier	Comment
Alkaline	Alkaline Water is a water-based fluid which has more hydroxyl ions (OH-) than hydrogen ions (H+) and pH greater than 7.
Brine	Brine Water has a salinity greater than (>) 50.0 parts per thousand (ppt).
Salt	Salt Water has a salinity between 30.1 and 50.0 parts per thousand (ppt).
Brackish	Brackish Water has a salinity generally between 0.5 and 30.0 parts per thousand (ppt). The specific range of salinity may vary by agency.
Fresh	Fresh Water has a salinity less than (<) 0.5 parts per thousand (ppt).
Combination	Combination Water is water of differing salinity measurements.

Product Significance

Product Significance is the current business priority of a specific Product Type. Any facet value selected here also requires an associated Product Type.

Facet Value	Facet Value Definition
Primary	A Primary Product Significance identifies the Product Type that is most significant.
Secondary	A Secondary Product Significance identifies the Product Type that is the second most significant.
Tertiary	A Tertiary Product Significance identifies the Product Type that is the third most significant.
Show	A Show Product Significance identifies a Product Type present in non-commercial quantity.

Clarification
Significance is based on various technical and economic factors, not just volume, and may vary over the life of the facility.

Equipment

Definition:

At a minimum, the planned or actual mechanical appurtenances that defines the starting and ending points of a facility that supports the purpose of the facility.

Related Terms:

- Atmospheric Emission Point (Flare Stacks, Vents, Pressure Relief Valves)
- Boundary Point
- Custody Transfer Point
- Electric meter
- Lease Automatic Custody Transfer (LACT)
- Load Out (Offloading Point)
- Sales Meter
- Wellhead (Surface or Seabed)

Clarification:

Leased, rented, and any third-party equipment contained within the facility is considered part of the facility

Facility Engineering defines many equipment classes as part of facility operation. The *What is a Facility* committee does not attempt to identify all equipment classes and focuses on equipment classes that start and end facility boundaries

Thank you to everyone who participated in this *What is a Facility* work. The PPDM Association's library of International Energy Data Standards (IEDS) is a collaboration, globally and among numerous industry stakeholders. Thank you to everyone who shared their time and expertise with us from the initial discussions, survey and recommendations through intensive working sessions, meetings, online collaboration, and mapping between versions.

What is A Facility Work Group Volunteers include:

- Tom Duong (Chair) Assetas
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- Heath Arstingstall, Qellus
- Jess Kozman, Katalyst
- Manuel De Vega, Repsol
- Rizky Kahfie, Pertamina
- Rob Macewan, Syndigo
- Scott Strandberg, S & P Global

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Feedback on this or any PPDM Association standards are always welcome at projects@ppdm.org.

Sources:

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- https://www.epa.gov/ghgemissions/overview-greenhouse-gases
- https://docs.ppdm.org/BUSINESS_ASSOCIATES

Notes:

What's Next?

PPDM Association Data Resources are developed only with the support of industry sponsors and volunteer subject matter experts. If interested in expanding What is a Facility (Phase 2) contact projects@ppdm.org.

Thank you to our sponsor, Chevron Global, for recognizing the value of *What is a Facility*. PPDM Association Data Resources are developed with the support of Industry Sponsors.

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