



Tools and Techniques for the Data Pipeline Updates from XBRL US

XBRL Filed Data

XBRL API

Public Filings Database

Data Community

What's next?

Q&A



XBRL Filed Data updates - global functions

Unified codebase – Excel and Google Sheets have the same format and functionality

Dynamic dropdowns – filtered options cascade from higher selections (ie. Report Source)

Accessible dropdown queries –  return the filtered dropdown query to the spreadsheet

SQL output option – print the equivalent SQL statement for the Public Filings Database

Unique filter – remove ‘duplicate’ results from the query

*Increased rows returned for Power User and all Organizational Memberships to **5,000 records***

XBRL Filed Data updates - global functions

Unified codebase – Excel and Google Sheets have the same format and functionality
=showData() in Google OR =XBRL.showData() in Excel

The image displays two screenshots of spreadsheets. The left screenshot shows a Google Sheet titled 'Untitled spreadsheet' with a table of XBRL data. The table has columns for report ID, filing date, entity name, and document type. An 'Apps Script application' configuration window is overlaid on the right side of the spreadsheet, showing options for function selection (set to 'cube'), source filtering (set to 'ALL'), and entity selection (set to 'Rochester').

report.id	report.filing-date	report.entity-narr	report.document-type
484017	2022-06-05	Rochester Gas a	714
481784	2022-05-31	Rochester Gas a 1/3-Q	
462304	2022-04-18	Rochester Gas a	1
428820	2021-08-30	Rochester Gas a 1/3-Q	
428819	2021-06-01	Rochester Gas a 1/3-Q	
482741	2021-04-19	Rochester Gas a	1
447224	2020-05-05	Rochester Gas a	714
428047	2020-04-17	Rochester Gas a	1
458887	2020-04-17	Rochester Gas a 1/3-Q	
427721	2019-11-27	Rochester Gas a 1/3-Q	
427720	2019-08-29	Rochester Gas a 1/3-Q	
427719	2019-05-30	Rochester Gas a 1/3-Q	
447223	2019-05-03	Rochester Gas a	714
427231	2019-04-18	Rochester Gas a	1
426913	2018-11-29	Rochester Gas a 1/3-Q	
426912	2018-08-29	Rochester Gas a 1/3-Q	
447222	2018-05-31	Rochester Gas a	714
426911	2018-05-30	Rochester Gas a 1/3-Q	
426225	2018-04-18	Rochester Gas a	1
426224	2017-11-29	Rochester Gas a 1/3-Q	
426223	2017-08-29	Rochester Gas a 1/3-Q	
426222	2017-05-31	Rochester Gas a 1/3-Q	
447221	2017-05-22	Rochester Gas a	714
425420	2017-04-18	Rochester Gas a	1
425419	2016-11-30	Rochester Gas a 1/3-Q	
425418	2016-08-29	Rochester Gas a 1/3-Q	
424624	2016-07-01	Rochester Gas a	1

The right screenshot shows an Excel spreadsheet with the same data table. An 'XBRL Filed Data' configuration panel is overlaid on the right, showing similar options for function selection (set to 'cube'), source filtering (set to 'FERC'), and entity selection (set to 'Rochester').

report.id	report.filing-date	report.entity-narr	report.document-type
484017	2022-06-05	Rochester Gas a	714
481784	2022-05-31	Rochester Gas a 1/3-Q	
462304	2022-04-18	Rochester Gas a	1
428820	2021-08-30	Rochester Gas a 1/3-Q	
428819	2021-06-01	Rochester Gas a 1/3-Q	
482741	2021-04-19	Rochester Gas a	1
447224	2020-05-05	Rochester Gas a	714
428047	2020-04-17	Rochester Gas a	1
458887	2020-04-17	Rochester Gas a 1/3-Q	
427721	2019-11-27	Rochester Gas a 1/3-Q	
427720	2019-08-29	Rochester Gas a 1/3-Q	
427719	2019-05-30	Rochester Gas a 1/3-Q	
447223	2019-05-03	Rochester Gas a	714
427231	2019-04-18	Rochester Gas a	1
426913	2018-11-29	Rochester Gas a 1/3-Q	
426912	2018-08-29	Rochester Gas a 1/3-Q	
447222	2018-05-31	Rochester Gas a	714
426911	2018-05-30	Rochester Gas a 1/3-Q	
426225	2018-04-18	Rochester Gas a	1
426224	2017-11-29	Rochester Gas a 1/3-Q	
426223	2017-08-29	Rochester Gas a 1/3-Q	
426222	2017-05-31	Rochester Gas a 1/3-Q	
447221	2017-05-22	Rochester Gas a	714

XBRL Filed Data updates - global functions

Dynamic dropdowns – filtered options cascade from higher selections (ie. Report Source)

The image displays three sequential screenshots of a web application interface for filtering XBRL data. Each screenshot shows a 'Function' dropdown set to 'fact' and a 'Filter by Source (eg. FERC, SEC)' dropdown. The first screenshot shows the Source filter set to 'SEC' and the Document Type filter set to '10-K' and '10-Q'. A list of reports for 'Duke' is shown, with the first item circled in blue. The second screenshot shows the Source filter set to 'FERC' and the Document Type filter set to 'Select Value'. A blue arrow points from the 'FERC' filter to the second screenshot. The third screenshot shows the Source filter set to 'ALL' and the Document Type filter set to 'Select Value'. The list of reports for 'Duke' is shown, with the first item circled in blue.

Function: fact

Filter by Source (eg. FERC, SEC): SEC

Filter by Document Type (eg. 10-K, 6-Q): 10-K x 10-Q x

Select Report by Entity Name: Duke

- 10-Q,2022-05-09,DUKE ENERGY CORPORATION (470360)
- 10-Q,2022-04-29,DUKE REALTY CORPORATION (465569)
- 10-K,2022-03-30,DUKE ENERGY CAROLINAS NC STORM FUNDING LLC (456635)
- 10-K,2022-03-30,DUKE ENERGY PROGRESS NC STORM FUNDING LLC (456639)
- 10-K,2022-03-29,DUKE ENERGY FLORIDA PROJEC FINANCE, LLC (456205)
- 10-K,2022-02-24,DUKE ENERGY CORPORATION

Function: fact

Filter by Source (eg. FERC, SEC): FERC

Filter by Document Type (eg. 10-K, 6-Q): Select Value

Select Report by Entity Name: Duke

- 714,2022-05-31,Duke Energy Control Area Service LLC (Arlington Valley WECC AZ) (481670)
- 1/3-Q,2022-05-26,Duke Energy Carolinas, LLC (481429)
- 1/3-Q,2022-05-26,Duke Energy Kentucky, Inc. (481464)
- 1/3-Q,2022-05-26,Duke Energy Ohio, Inc. (481461)
- 1/3-Q,2022-05-26,Duke Energy Progress, LLC (481426)
- 1/3-Q,2022-05-25,Duke Energy Florida, LLC (4813)
- 1/3-Q,2022-05-25,Duke Energy Indiana, LLC

Function: fact

Filter by Source (eg. FERC, SEC): ALL

Filter by Document Type (eg. 10-K, 6-Q): Select Value

Select Report by Entity Name: Duke

- 8-K,2022-07-21,DUKE REALTY CORPORATION (490604)
- 8-K,2022-07-18,DUKE REALTY CORPORATION (489777)
- 8-K,2022-06-30,DUKE REALTY CORPORATION (487485)
- 8-K,2022-06-15,Duke Energy Corporation (48481)
- 8-K,2022-06-13,DUKE REALTY CORPORATION (483955)
- 714,2022-05-31,Duke Energy Control Area Service LLC (Arlington Valley WECC AZ) (481670)

XBRL Filed Data updates - global functions

Accessible dropdown queries —  return the filtered dropdown query to the spreadsheet

report.id	report.filing-date	report.entity-name	report.document-type
484017	2022-06-05	Rochester 714	
481784	2022-05-31	Rochester 1/3-Q	
462304	2022-04-11	Rochester 1	
428820	2021-08-31	Rochester 1/3-Q	
428819	2021-06-01	Rochester 1/3-Q	
482741	2021-04-11	Rochester 1	
447224	2020-05-01	Rochester 714	
428047	2020-04-11	Rochester 1	
458687	2020-04-11	Rochester 1/3-Q	
427721	2019-11-21	Rochester 1/3-Q	
427720	2019-08-21	Rochester 1/3-Q	
427719	2019-05-31	Rochester 1/3-Q	
447223	2019-05-01	Rochester 714	
427231	2019-04-11	Rochester 1	
426913	2018-11-21	Rochester 1/3-Q	
426912	2018-08-21	Rochester 1/3-Q	
447222	2018-05-31	Rochester 714	
426911	2018-05-31	Rochester 1/3-Q	
426225	2018-04-11	Rochester 1	
426224	2017-11-21	Rochester 1/3-Q	
426223	2017-08-21	Rochester 1/3-Q	
426222	2017-05-31	Rochester 1/3-Q	

XBRL Filed Data

Query **Validate**

To get as-filed data, choose a function from the drop-down menu below; at least one search parameter from the list of options that appear, and; as many 'Fields to Return' as needed - then click Get.

Function
cube

Filter by Source (eg. FERC, SEC)
FERC

Select Report by Entity Name
Rocheste

714,2022-06-05,Rochester Gas and Electric Corporation (484017)
1/3-Q,2022-05-31,Rochester Gas and Electric Corporation (481784)

XBRL Filed Data updates - global functions

SQL output option – print the equivalent SQL statement for the Public Filings Database

Output will need quotes reduced to single and removed from beginning and end of statement

The screenshot shows an Excel spreadsheet with the following SQL query in cell A1:

```
=XBRL.showSQL(CONCATENATE("https://api.xbrl.us/api/v1/cube/search?report.source-name=sec&report.id=464153&fields=cube.description,cube.drs-role-uri,cube.primary-local-name,cube.tree-sequence,dimensions.count,fact.value,period.fiscal-period,period.fiscal-year,report.id,cube.limit(),"cube.offset()&"))
```

The query is displayed in the formula bar. The spreadsheet grid shows columns A through E. A blue arrow points from the 'Query' button in the 'XBRL Filed Data' panel to the SQL query in cell A1.

The 'XBRL Filed Data' panel on the right includes the following elements:

- Query** and **Validate** buttons.
- Input fields for **period.fiscal-year** and **reportId**.
- Radio buttons for **Function + Data**, **SQL**, and **Query**.
- Get** button.
- XBRL API endpoints:** **Logout** button.
- Fact** - filed facts and related metadata.
- Entity** - information about entities submitting reports.
- Report** - details about submitted reports.

XBRL Filed Data updates - global functions

Unique filter – remove ‘duplicate’ results from the query

The screenshot shows an Excel spreadsheet with a formula bar containing the following XBRL query: `=XBRL.showData("https://api.xbrl.us/api/v1/fact/search?report.document-type=10-K&report.id=416161&fact.has-dimensions=false&fields=concept.local-name,fact.value,period.fiscal-period,period.fiscal-year,fact.limit(),fact.offset()&","","","1")`

	A	B	C	D	E	F	G	H	I	J
807	DisposalGroupNotDisco	0 Y		2021		VariableL	53000000 Y		2019	
808	InterestExpense	5.41E+09 Y		2019		VariableL	57000000 Y		2020	
809	PaymentsForProceedsFr	1.14E+08 Y		2019		Weighted	0 Y		2020	
810	MinorityInterestDecreas	12000000 Y		2020		Weighted	32000000 Y		2019	
811	ForeignCurrencyTransac	4.2E+08 Y		2020		Weighted	43000000 Y		2021	
812	ProceedsFromRepayme	3.27E+09 Y		2021		Weighted	3.97E+09 Y		2020	
813	LesseeWeightedAverag	<![CDATA Y		2021		Weighted	4E+09 Y		2019	
814	RoyaltyIncomeNonoper	3.81E+08 Y		2019		Weighted	4.03E+09 Y		2021	
815	CommitmentsAndConti	<![CDATA Y		2021		Weighted	3.97E+09 Y		2019	
816	ValuationAllowancesAn	6.06E+08 Y		2019		Weighted	3.97E+09 Y		2020	
817	OtherPostretirementDe	6.24E+09 Y		2020		Weighted	3.99E+09 Y		2021	
818	GainLossOnInvestments	3.15E+08 Y		2020	906	Wholesale	0.89 Y		2021	817
819	LesseeLeasesPolicyText	We lease Y		2021	count					count
820	ProductWarrantyAccrual	3.92E+09 Y		2020						
821	InvestmentIncomeInter	8.09E+08 Y		2019						
822	InvestmentIncomeInter	8.09E+08 Y		2019						
823	DerivativeLiabilitiesCurr	8.59E+08 Y		2020						
824	RightOfUseAssetObtain	1.92E+08 Y		2021						

The side panel, titled "XBRL Filed Data", includes a "Query" tab and a "Validate" button. Under "Fields to Return", the following fields are selected: `concept.local-name`, `fact.value`, `period.fiscal-period`, and `period.fiscal-year`. The "Unique" checkbox is checked. A blue arrow points from the "Unique" checkbox to the "817 count" cell in the spreadsheet. The "Get" button is visible at the bottom of the panel.

XBRL Filed Data updates – new features

Endpoint options:

- **Cube** – returns content of a specific table or tables (cube)
- **Cube-dimensions** – returns details of dimensions of a specific table

XBRL Filed Data updates – new features

Cube endpoint – returns content of a specific table or tables (cube)

The image shows an Excel spreadsheet with a formula bar containing the following formula: `=XBRL.showData(CONCATENATE("https://api.xbrl.us/api/v1/cube/search?report.source-name=ferc&report.id=481501&fields=cube.description.sort(ASC),cube.primary-local-name,cube.tree-sequence.sort(ASC),dimensions.count,fact.value,period.fiscal-period,"`

A	B	C	D	E	F
1	cube.description	cube.primary-local-name	cube.tree-sequence	dimen	fact.value period.fiscal-period
2	01.1 - Schedule - Identifica	FormType	1	0	714 Y
3	01.1 - Schedule - Identifica	RespondentIdentificationC	3	0	6455 Y
4	01.1 - Schedule - Identifica	RespondentLegalName	4	0	Duke Energy Florida, LLC Y
5	01.1 - Schedule - Identifica	CompanyIdentifier	5	0	C000136 Y
5	01.1 - Schedule - Identifica	ReportYear	8	0	2021 Y
7	01.1 - Schedule - Identifica	ReportPeriod	9	0	Q4 Y
8	01.1 - Schedule - Identifica	BalancingAuthorityAreaFla	11	0	TRUE Y
9	01.1 - Schedule - Identifica	BalancingAuthorityAreaNa	12	0	Duke Energy Florida, LLC Y
0	01.1 - Schedule - Identifica	PlanningAreaFlag	14	0	TRUE Y
1	01.1 - Schedule - Identifica	PlanningAreaName	15	0	Duke Energy Florida, LLC Y
2	01.1 - Schedule - Identifica	RespondentMailingAddress	16	0	N; St. Petersburg, FL 33710 Y
3	01.1 - Schedule - Identifica	NameOfContactPerson	18	0	Andres De Valencia Y
4	01.1 - Schedule - Identifica	TitleOfContactPerson	19	0	Energy Accounting Analyst Y
5	01.1 - Schedule - Identifica	EmailOfContactPerson	20	0	alencia@duke-energy.com Y
6	01.1 - Schedule - Identifica	TelephoneOfContactPerso	21	0	727 384-7838 Y
7	01.1 - Schedule - Identifica	NameOfCertifyingOfficial	24	0	Sam Holeman Y
8	01.1 - Schedule - Identifica	TitleOfCertifyingOfficial	25	0	omision Sys Planning & Ops Y
9	01.1 - Schedule - Identifica	CertifyingOfficialDate	26	0	2022-05-13 Y
0	01.1 - Schedule - Identifica	SubmissionType	27	0	0 Y
1	02.1 - Schedule - Generatin	OrderNumber	1	1	9 Y
2	02.1 - Schedule - Generatin	OrderNumber	1	1	24.103 Y
3	02.1 - Schedule - Generatin	OrderNumber	1	1	24.102 Y

The right side of the image shows the 'XBRL Filed Data' interface. It has a 'Query' tab and a 'Validate' tab. Under 'Fields to Return', the following fields are listed: cube.description, cube.primary-local-name, cube.tree-sequence, dimensions.count, fact.value, period.fiscal-period, period.fiscal-year, and report.id. At the bottom, there are radio buttons for 'Function + Data' (selected), 'Data', 'Query', and 'SQL', and a checkbox for 'Unique'. A 'Get' button is also present. The XBRL US logo is visible in the bottom right corner.

XBRL Filed Data updates – new features

Cube-dimensions endpoint – returns details of dimensions of a specific table

The screenshot displays an Excel spreadsheet with a formula bar containing the following XBRL API query:

```
=XBRL.showData("https://api.xbrl.us/api/v1/dimension/search?report.id=481501&fields=cube.table-local-name.sort(ASC),cube.dimension-local-name.sort(ASC),cube.member-local-name,cube.member-tree-sequence.sort(ASC),dimension.limit(),dimension.offset()&","","","1")
```

A	B	C	D
cube.table-local-name	cube.dimension-local-name	cube.member-local-name	cube.member-tree-sequence
AdjacentBalancingAuthorityArea	AdjacentBalancingAuthorityArea		0
BalancingAuthorityAreaMonth	MonthAxis	MonthDomain	0
BalancingAuthorityAreaMonth	MonthAxis	JanuaryMember	11
BalancingAuthorityAreaMonth	MonthAxis	FebruaryMember	12
BalancingAuthorityAreaMonth	MonthAxis	MarchMember	13
BalancingAuthorityAreaMonth	MonthAxis	AprilMember	14
BalancingAuthorityAreaMonth	MonthAxis	MayMember	15
BalancingAuthorityAreaMonth	MonthAxis	JuneMember	16
BalancingAuthorityAreaMonth	MonthAxis	JulyMember	17
BalancingAuthorityAreaMonth	MonthAxis	AugustMember	18
BalancingAuthorityAreaMonth	MonthAxis	SeptemberMember	19
BalancingAuthorityAreaMonth	MonthAxis	OctoberMember	20
BalancingAuthorityAreaMonth	MonthAxis	NovemberMember	21
BalancingAuthorityAreaMonth	MonthAxis	DecemberMember	22
BalancingAuthorityAreaNetEn	MonthAxis	MonthDomain	0
BalancingAuthorityAreaNetEn	MonthAxis	JanuaryMember	1
BalancingAuthorityAreaNetEn	MonthAxis	FebruaryMember	2
BalancingAuthorityAreaNetEn	MonthAxis	MarchMember	3
BalancingAuthorityAreaNetEn	MonthAxis	AprilMember	4
BalancingAuthorityAreaNetEn	MonthAxis	MayMember	5
BalancingAuthorityAreaNetEn	MonthAxis	JuneMember	6
BalancingAuthorityAreaNetEn	MonthAxis	JulyMember	7

The right-hand side of the image shows the 'XBRL Filed Data' interface. It features a 'Query' tab and a 'Validate' tab. Under 'Fields to Return', the following fields are selected:

- cube.table-local-name
- cube.dimension-local-name
- cube.member-local-name
- cube.member-tree-sequence

Below the fields, there are radio buttons for 'Function + Data' (selected), 'Data', 'Query', and 'SQL'. There is also a checkbox for 'Unique'. A 'Get' button is present. At the bottom, there is a 'Logout' button and a note: 'Fact - filed facts and related metadata'.

XBRL Filed Data updates – new features

Validation options:

FERC – Members and public utilities can check filings created with 2022 taxonomies against the rules published and required by the Federal Energy Regulatory Commission

ESEF – Anyone registered with a company email (ie. not Gmail, Hotmail, etc.) can use Data Quality Committee checks to scan annual reports required by the European Securities and Markets Authority (<https://esef-dqr.xbrl.org> and <https://filings.xbrl.org>)



Additional XBRL API updates

- Added documentation for **cube** and **cube-dimensions** endpoints
- Updated existing documentation so available fields on the **document** endpoint are displayed:

document.content

entity.name

document.documentset

entity.scheme

document.id

report.filing-date

entity.cik

report.hash

entity.code

report.id

Public Filings Database updates

Updated the Entity-Relationship Diagram and posted it for XBRL US Members – <https://xbrl.us/home/use/filings-database/documentation>

XBRL US Database Documentation

The XBRL US Database contains data from SEC and FERC financial reports in a relational model. The data is sourced from RSS feeds provided by the agencies. The database contains data from the beginning of the mandatory SEC filing period, which started April 15th, 2009 and 10+ years of FERC filings (starting with 2011). Filings from the previous voluntary filing period are not included.

The database contains two schemas: "public" and "xbrl_public". The "public" schema contains all the data from the SEC filings. Access to this schema is read only. The data in the "public" schema is updated as filings are processed. Generally, the RSS feed is checked every 15 minutes for new filings.

The "xbrl_public" schema is provided as a convenience to users to store views and database functions. Any information stored in the "xbrl_public" schema is viewable and editable by all users.

Although the database is geared towards containing SEC filings, the data model is mostly based on generic XBRL (including XBRL dimensions).

Resources:

- Documentation (updated April, 2017)
- Database Changes (implemented June, 2017)
- Entity-Relationship Diagram (updated June, 2022)

Using Data

Database of Public Filings

SQL Queries – XBRL US Database

Protected: XBRL US Database Documentation

Database Snapshots (AWS) and Hosted Instances

The XBRL API

XULE, an open-source processor

XBRL Data Community

Updates

Data Community updates

- Refreshed all staff-developed spreadsheet templates and removed outdated resources
- Added a loop to all Python Jupyter Notebooks so the script returns all available data
- Posted a new Jupyter Notebook in Python to support a Case Study on effective tax rates

What's next?

- Normalized views of Balance Sheet and Income Statement (available as an add-on for Members at the Power User level and above, including all organizational Members)
- ESEF data added to the Public Filings Database
- Dimensional data re-imagined for spreadsheets
- Taxonomy viewer add-on for Excel and/or Google Sheets

Questions?