

Common File Format & Validation Tool

Central Hudson Gas & Electric's Annual Solar+ Summit



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Agenda

- DER settings file overview and motivation
- Discuss adoption by the industry
- Validation tool
- Working group
- Q&A



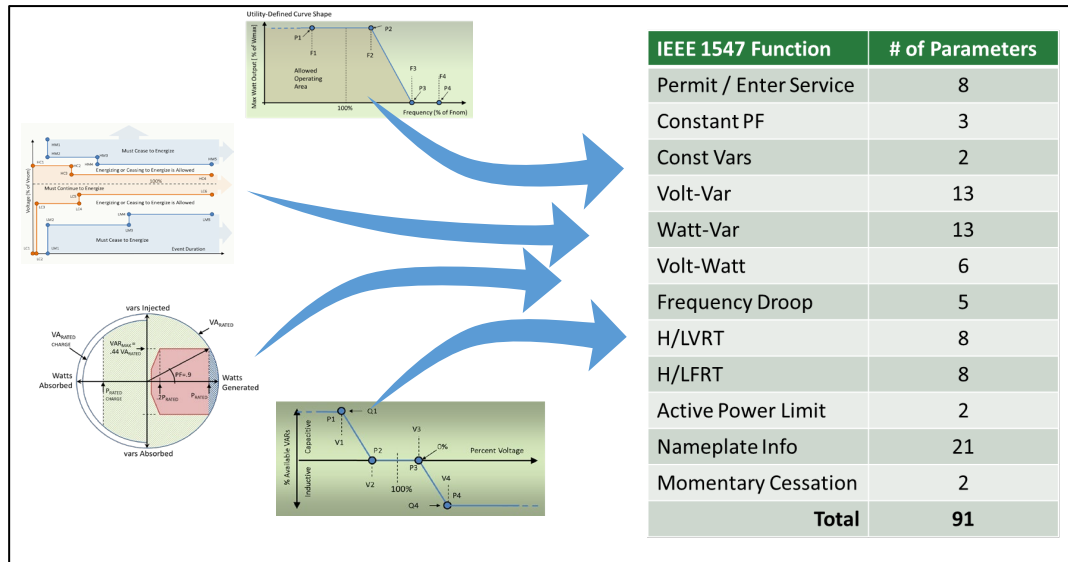
Why a Standard Exchange Format?

- Utilities are starting to specify default settings
- DER continues to grow rapidly in NY and elsewhere
- Importance of settings is growing
- Existing practices for exchange are immature
- IEEE 1547-2018 defines a LOT of parameters!

Goal to Simplify DER Settings Exchange

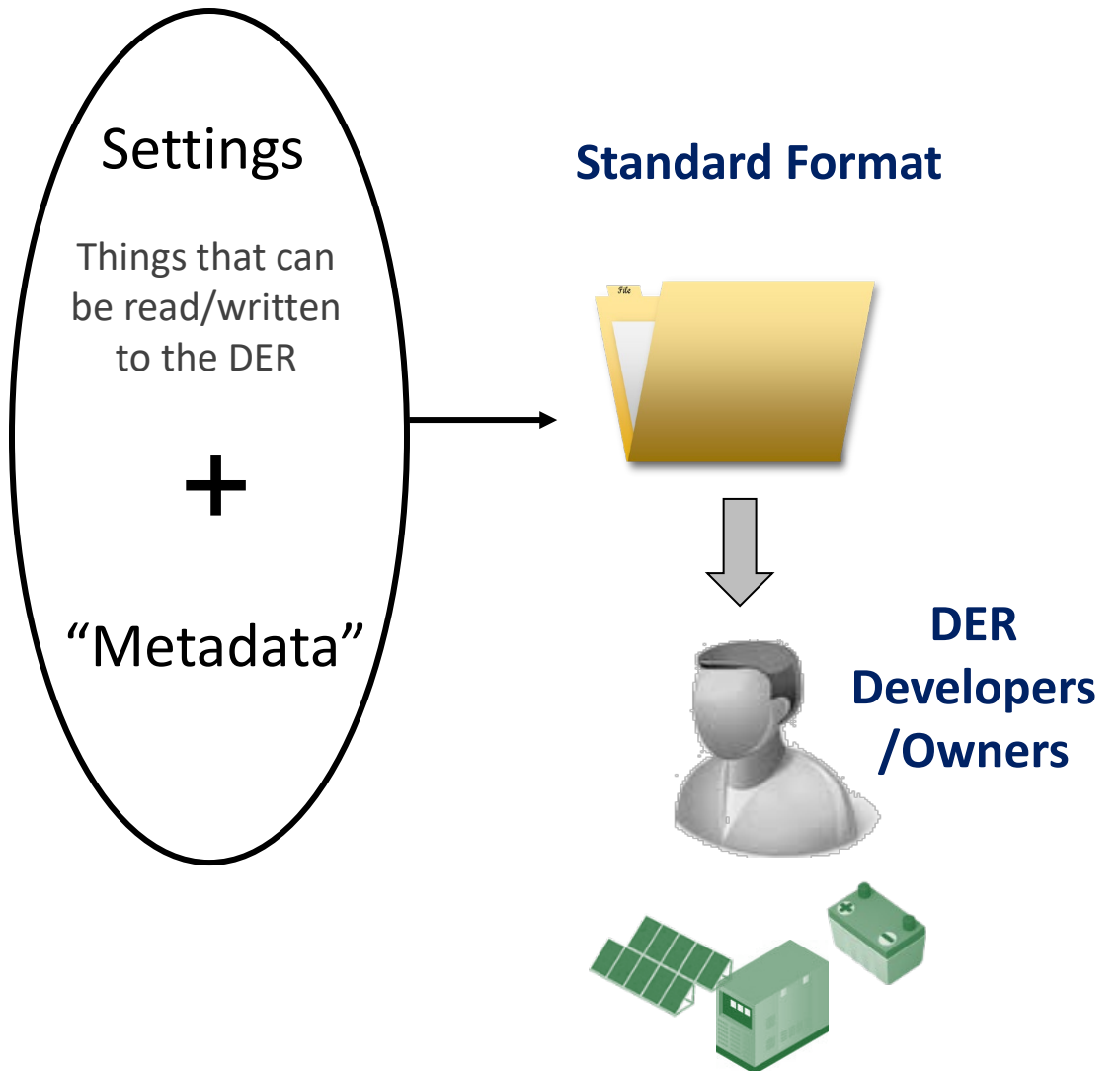
What is a Settings “File”?

Settings

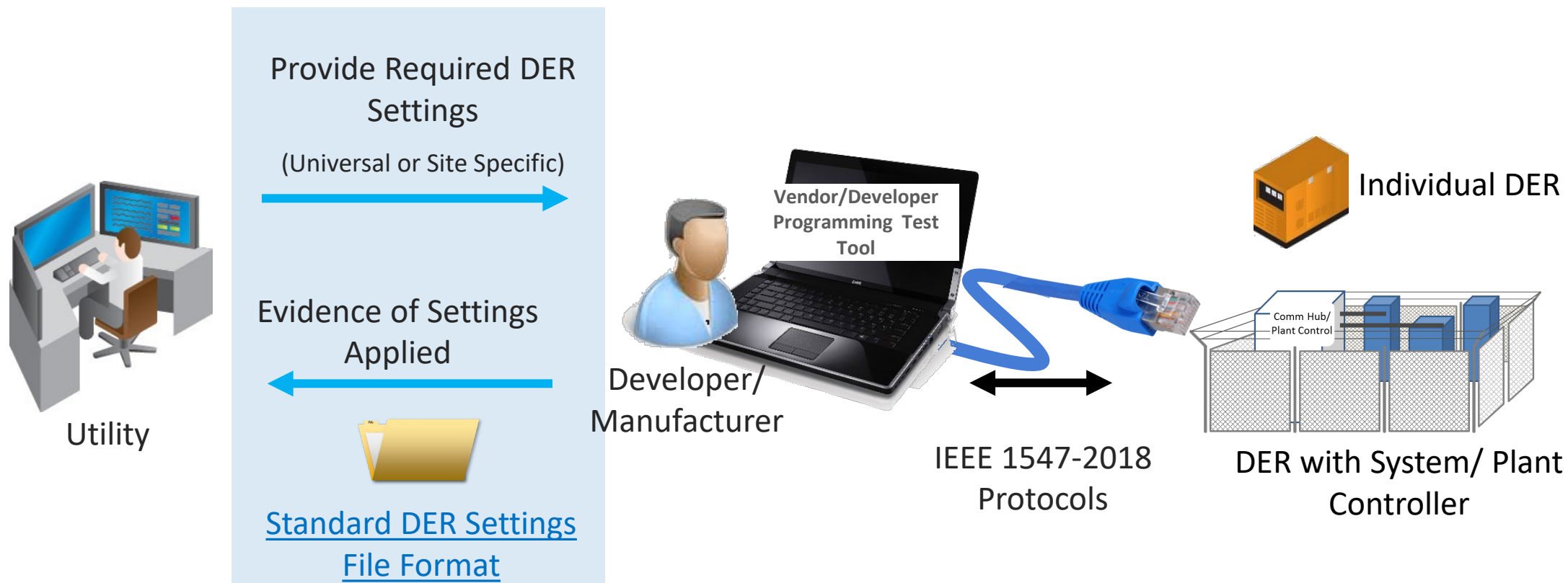


Metadata

- What types of DER does this file apply to?
- What sizes does it apply to?
- What utility generated this file?
- To what geographical region does it apply?
- Which DER did this come from?
- What street address?
- When?



Standard DER Settings File: Initial Primary Use Cases



Two use cases:

1. Utilities publish required settings, universal and/or site specific
2. Developers provide evidence back to utilities

A Consensus File Format was Developed

- Originated in IEEE 1547-2018 process
- 17 utilities, EPRI multi-member project
- Open Industry Working Group throughout 2020
- Consensus achieved in Fall 2020
- Spec (v1.0) published in December 2020
- Revised spec (v2.0) published in September 2022
- References introduced in IEEE 1547.2



*Initiated during IEEE 1547-2018,
EPRI provided consensus spec*

IEEE Standards Support of *Standard (Common) File Format*

IEEE 1547.2 in Final Ballot– *Guide for Application of IEEE Std 1547-2018™, IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces (ready to be released)*

Annex F (informative) DER Functional Settings: Standardized File Format and Database Exchange

F.1 Application to Specification of Required Settings

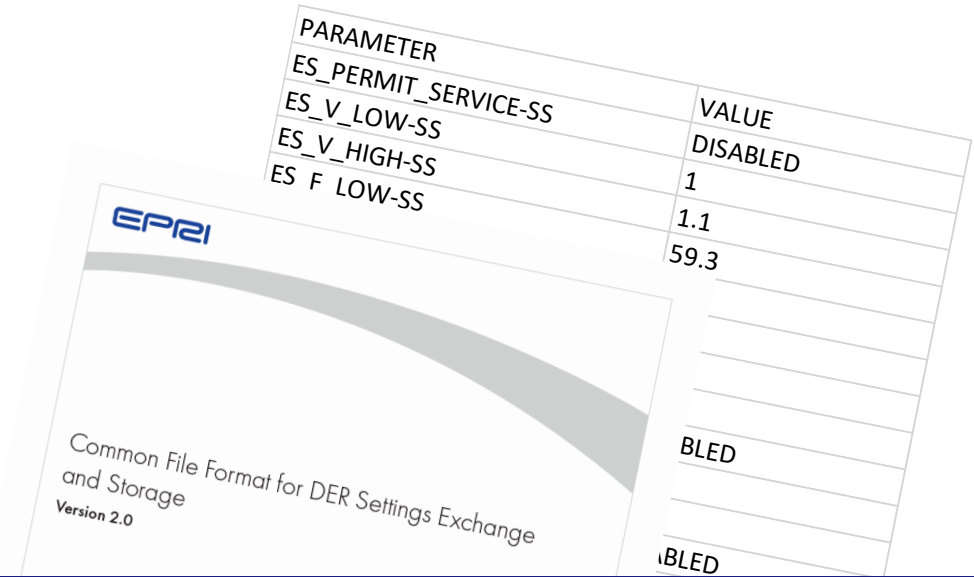
F.2 Application to DER Model Exchange

IEEE 1547-xxxx Future – *Revision in process with 4 subgroups*

1. SG1 (for the Table of Contents as the CFF may become an Annex like in 1547.2)
2. SG4 (Interoperability)
3. SG6 (Modeling)
4. SG7 (Tests & Verifications)

Common File Format Highlights

- See the working specification for technical details:
 - [Common File Format for Distributed Energy Resources Settings Exchange and Storage](https://www.epri.com/research/products/000000003002025445)
- Simple, human readable, CSV format
 - Leveraging IEEE 1547.1
- Two columns: Parameter label and value
- Consistent labeling convention
- Clearly defined value formatting
- Fixed units
- Row order doesn't matter



<https://www.epri.com/research/products/000000003002025445>

Common File Format for DER Settings Exchange and Storage: Version 2.0

Details

Product ID	Date Published	Pages	Document Type
3002025445	Sep 21, 2022	60	Technical Update

Abstract

This document defines a common file format for the exchange and storage of configuration settings for distributed energy resources (DER). This file format has several potential uses, including how utilities express required DER default settings to developers, how DER developers provide evidence of as-programmed settings back to the utility, and how utilities store and track the settings of DER throughout their systems.

To the extent possible, this common file definition utilizes the parameter attributes from the IEEE 1547.1-2020 standard, including the unique parameter labels, data types, units, and possible value options. This document dictates how these parameters and their values are expressed and formatted in a common file format so that its contents can be handled electronically or otherwise interpreted and applied without ambiguity. The file format was

No Charge

This Product is publicly available

[DOWNLOAD: PDF \(867.46 KB\)](#)

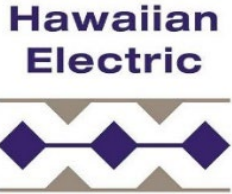
Keywords

[Configuration](#)
[DER](#)
[IEEE 1547](#)
[Settings](#)
[Common file format](#)

Notes

For further information about EPRI, call the EPRI Customer Assistance Center at (800) 313-3774 or email askepri@epri.com.

Utilities Adopting



Software Tool

DER Settings File Creator

EPR | ELECTRIC POWER RESEARCH INSTITUTE

Optional: Open an Existing DER Settings File as a Starting Point

File Name:

Select Normal Category

Category A
 Category B
 Not Specified

Select Abnormal Category

Category I
 Category II
 Category III
 Not Specified

Select Var Function

Constant Power Factor
 Constant Var
 Volt-Var
 Watt-Var
 No Var

Select a row, then press 'Enter' or double-click on the 'Value' column to edit it. Press 'Delete' to delete values

Parameter	Units	Value (Editable)	Min	Max
[-] Nameplate information				
[-] Maximum active power parameters				
AP_LIMIT_ENABLE				
AP_LIMIT	P p.u.		0.0	1.0
[-] Enter service after trip parameters				
ES_PERMIT_SERVICE				
ES_V_LOW	V p.u.		0.88	0.95
ES_V_HIGH	V p.u.		1.05	1.06
ES_F_LOW	Hz		59.0	59.9
ES_F_HIGH	Hz		60.1	61.0
ES_DELAY	s		0	600
ES_RANDOMIZED_DELAY	s		0	1000
ES_RAMP_RATE	s		0	1000
[-] Constant power factor mode parameters				
[-] Constant reactive power mode parameters				
[-] Voltage-reactive power mode parameters				
[-] Active power-reactive power mode parameters				
[-] Voltage-active power mode parameters				

More... ▾

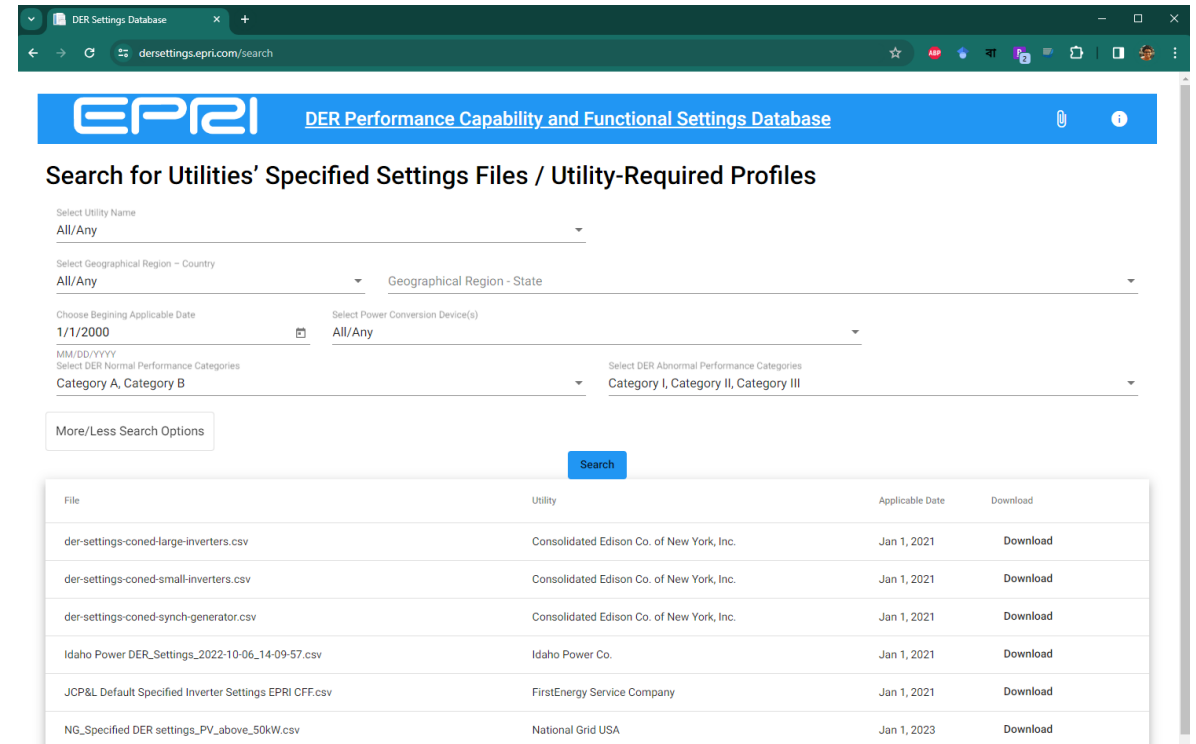
- Create DER settings files
 - Create in standard format
 - Error-free file creation
 - The tool follows the rules to create a CSV file
 - By default, it creates SS files but can also create AS files
 - Assess the format of existing files
- Compare two CSV files in the standard format

<https://www.epri.com/research/products/000000003002028567>

Easy and error-free creation of DER settings files

Common Repository for DER Settings Files

- dersettings.epri.com
- Only authorized utility personnel can upload
- Anyone can search and download
 - One-stop-shop for DER developers and other stakeholders
- Gaining popularity
 - All major NY utilities
 - Mandate by the state of NM
 - Several other utilities have started utilizing



The screenshot shows the EPRI DER Performance Capability and Functional Settings Database search interface. The page title is "DER Performance Capability and Functional Settings Database". The search criteria are as follows:

- Select Utility Name: All/Any
- Select Geographical Region - Country: All/Any
- Geographical Region - State: (empty)
- Choose Beginning Applicable Date: 1/1/2000
- Select Power Conversion Device(s): All/Any
- Select DER Normal Performance Categories: Category A, Category B
- Select DER Abnormal Performance Categories: Category I, Category II, Category III

A "Search" button is visible. Below the search criteria, a table displays the search results:

File	Utility	Applicable Date	Download
der-settings-coned-large-inverters.csv	Consolidated Edison Co. of New York, Inc.	Jan 1, 2021	Download
der-settings-coned-small-inverters.csv	Consolidated Edison Co. of New York, Inc.	Jan 1, 2021	Download
der-settings-coned-synch-generator.csv	Consolidated Edison Co. of New York, Inc.	Jan 1, 2021	Download
Idaho Power DER_Settings_2022-10-06_14-09-57.csv	Idaho Power Co.	Jan 1, 2021	Download
JCP&L Default Specified Inverter Settings EPRI CFF.csv	FirstEnergy Service Company	Jan 1, 2021	Download
NG_Specified DER settings_PV_above_50KW.csv	National Grid USA	Jan 1, 2023	Download

Recommended Developer Actions

- Get familiar with the format requirements
- Review the spec for the common file format:
<https://www.epri.com/research/products/000000003002025445>
- Consider the software tool and settings database
 - [dersettings.epri.com](https://www.epri.com/research/products/000000003002028567)
 - <https://www.epri.com/research/products/000000003002028567>

Working Group Recurring Meeting

When?

- Started in February 2024
- Monthly check-ins
- Extra meetings can be arranged if required, in between regular calls
- Ask questions at any time
 - [DER Forum](#)
 - Email group
 - Other options?

What to Discuss?

- How things are going
 - Any questions/suggestions about the **file format**
 - Any questions/suggestions about the **tool**
 - Track all changes
- Training/demo on the tool if required
- Use as a discussion venue between utilities and developers/manufacturers

COFFEE: COMMON FILE FORMAT ENGAGEMENT & ENGINEERING CLUB



Questions & Answers



TOGETHER...SHAPING THE FUTURE OF ENERGY®