Data Model updates for High/Low Side Configuration

# Document Change History

| **Author/Contributor** | **Version** | **Date** | **Description of Changes** |
| --- | --- | --- | --- |
| Derek Fletcher | 1.0 | 4/9/2020 |  |
|  |  |  |  |

# Stakeholder Details

| **Stakeholder** | **Title** | **LAN ID** | **Role Description for Design** |
| --- | --- | --- | --- |
| Derek Fletcher | ADMS Data Lead | DMFM | Project Manager |
| David Gonzalez | Dist Ops Engineer | DCGA | Technical Expert |

# Background

The ADMS project needs HIGHSIDECONFIGURATION attribute added to the CAPACITORBANK feature class, LOWSIDECONFIGURATION attribute added to the TRANSFORMER feature class, and various domain value code and description changes to the HIGHSIDECONFIGURATION attribute in the TRANSFORMER and VOLTAGEREGULATOR feature classes.

These updates to the data model will facilitate the build of the network model in Schneider’s ADMS and provide the necessary data elements required for PG&E to run power flow in ADMS.

# Business Benefit (place X next to selection, describe other)

Safety(); Compliance(); WSIP(); Ergonomics(); Data Quality(x); Performance(); Other() \_\_\_\_\_\_\_\_\_\_\_

# Incident Number(s)

* [JIRA EGIS-282](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-282) (CapacitorBank HIGHSIDECONFIGURATION data model updates)
* [JIRA EGIS-283](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-283) (VoltageRegulator HIGHSIDECONFIGURATION data model updates)
* [JIRA EGIS-284](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-284) (Transformer HIGHSIDECONFIGURATION data model updates)
* [JIRA EGIS-334](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-334) (Transformer LOWSIDECONFIGURATION data model updates)

# Proposed Business Requirements:

* AC1: A new attribute called HIGHSIDECONFIGURATION is added to the CAPACITORBANK feature class, with new domain values as shown in Table 1 below.
* AC2: A new attribute called LOWSIDECONFIGURATION is added to the TRANSFORMER feature class, with new domain values as shown in Table 1 below.
* AC3: New domain values are added for the existing TRANSFORMER.HIGHSIDECONFIGURATION attribute, as shown in Table 1 below.
* AC4: Two options for handling domain value changes in the VOLTAGEREGULATOR.HIGHSIDECONFIGURATION attribute.
  + Option 1: Create new character domain codes as shown in Table 1 below and retire the existing numeric domain codes. This option is preferred by the LOB for consistency and clarity in meaning.
  + Option 2: Retain the existing numeric domain codes and change the associated code description to align with the other feature classes. This option is preferred by IT due to the challenge of switching from numeric -> character codes.

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| --- | --- | --- | --- | --- | --- |
| **Domain Code1** | **Code Description** | **Available for Transformer HIGHSIDE-CONFIGURATION?** | **Available for Transformer LOWSIDE-CONFIGURATION?** | **Available for Capacitor  HIGHSIDE-CONFIGURATION?** | **Available for Voltage Regulator  HIGHSIDE-CONFIGURATION?** |
| LG (2) | Single Phase: Line-to-Ground | X |  |  | X |
| LL (6) | Single Phase: Line-to-Line | X |  |  | X |
| OD (3) | Open-Delta | X | X |  | X |
| OY (4) | Open-Wye | X | X |  | X |
| CD (1) | Closed-Delta | **X** | X | X | X |
| YG (5) | Wye-Grounded | **X** | X | X | X |
| YU | Wye-Ungrounded | **X** | X | X |  |
| ZZ | Zig-Zag | **X** | X |  |  |
| 2W | Two-Wire Single Phase |  | X |  |  |
| 3W | Three-Wire Single Phase |  | X |  |  |

**Table 1. Future-State Domain Values for HIGHSIDECONFIGURATION and LOWSIDECONFIGURATION**

**1** The parenthetical numeric values are to be used as the domain codes within the VoltageRegulator HIGHSIDECONFIGURATIONattribute. Numeric values are preferred within the VoltageRegulator feature class so as to not require a data model change from Numeric -> Character for this existing attribute.

* AC4: Subsequent to the enactment of the data model changes described above, the ADMS project will script updates to the attribute records according to logic based on Operating Voltage, Source Line Phasing, Phase Designation, and Unit Count.
  + These follow-up scripts are described in JIRA stories [EGIS-330](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-330), [EGIS-331](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-331), [EGIS-332](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-332)
* *[Only if AC4, Option 2 is selected above]* AC5: Simultaneously with running the script to update the VoltageRegulator HIGHSIDECONFIGURATION data ([EGIS-332](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-332)), Domain Value descriptions are updated for this attribute to align the naming convention with other feature classes, as shown in Table 2 below.
* AC6: After the data update scripts have been executed for the TRANSFORMER feature class, the obsolete domain values of “Y” and “D” will be removed from the system.
* AC7: After the data update scripts have been executed for the VOLTAGEREGULATOR feature class, the obsolete domain value of “99” will be removed from the system.
  + If AC4, Option 1 is selected above, the domain codes [1,2,3,4,5,6] will be retired as well.

**Table 2. Current- and future-state domain value descriptions for VoltageRegulator.HIGHSIDECONFIGURATION, *[if AC4, Option 2 is selected above]***

|  |  |  |
| --- | --- | --- |
| **VoltageRegulator HIGHSIDECONFIGURATION**  **Domain Code** | **Old VoltageRegulator HIGHSIDECONFIGURATION**  **Code Description** | **New VoltageRegulator HIGHSIDECONFIGURATION**  **Code Description** |
| 1 | Closed Delta | Closed Delta |
| 2 | Wye, No (Gr) | Single Phase: Line-to-Ground |
| 3 | Open Delta | Open Delta |
| 4 | Open Wye | Open Wye |
| 5 | Wye, Neu (Gr) | Wye Grounded |
| 6 | Single Phase | Single Phase: Line-to-Line |
| 99 | Unspecified | [Domain Removed] |

# Changes Required

## Process Changes

QA/QC rules are being designed by the ADMS team to require internal consistency between the Source Line Phasing, Phase Designation, Unit Count, Operating Voltage, High/Low Side Configuration, and NeutralIDC data for a given record. These QA/QC rules are under development and will be presented to the GIS DA later in 2020.

Mapping support to provide documentation on how to capture high side configuration attribute value for capacitor bank from the available domain values and low side configuration attribute value for transformer from the available domain values.

## Data Model Changes

* Additions to the data model are shown in Table 1 above.
* Subtractions from the data model are discussed in AC6 and AC7 above.

## Data Changes

Attachment 1 describes the detailed logic that will be used to script updates to the attribute records, as described in AC5 above and [EGIS-330](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-330), [EGIS-331](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-331), [EGIS-332](https://jiraappprd01.comp.pge.com:8443/browse/EGIS-332).

## Changes to Stored Displays

### *Editor Stored Displays*

Attribute editor should be visible and editable for all the attributes on the feature classes referenced in Table 1 above.

### *Webviewer Stored Displays*

Attributes should be visible in webviewer in all views for the feature classes referenced in Table 1 above.

## Map Production

We do not anticipate any changes to map production.

## Geomart

We do not anticipate any changes to Geomart.

## Interfaces

CYME - These attributes will be brought into CYME integration, no immediate effect with the changes.

TLM - These attributes may be brought into the TLM integration, no immediate effect with the changes.

SAP – These attributes will be brought into the SAP (ED06) integration, no immediate effect with the changes.

DMS – These attributes will be brought into the DMS (ED50) integration, no immediate effect with the changes.

## SAP Considerations

These attributes will be added to ED06 as discussed above.

SAP should be updated with one-time bulk data update along with the new attributes.

## Schematics

We do not anticipate any changes to Schematics.

## Business Objects Reports

We do not anticipate any changes to Business Objects Reports but need to validate DataMart.

## Field Asset Inventory (FAI) Impact

We do not anticipate any changes to FAI.

## Application Changes

### Editor Application changes

### Attribute editor should be visible and editable for all the attributes on the feature classes referenced in Table 1 above. (Same as above in Editor stored displays)

### Webviewer application changes

Attributes should be visible in webviewer in all views for the feature classes referenced in Table 1 above.

### Page Templates

We do not anticipate any changes to Page templates.

## Change Management

### Mapping Support

Mapping support to provide documentation on how to capture high side configuration attribute value for capacitor bank from the available domain values and low side configuration attribute value for transformer from the available domain values.

### WebViewer Job Aid

We do not anticipate need for job aid for webviewer, but release notes should cover the changes.

# Appendix A

Attachment 1: HIGHSIDECONFIG\_ScriptingRules