

# Auto-Validation System - Master Documentation

**Project:** VBA Excel Auto-Validation Framework

**Version:** 2.5 (Testing & Bug Fixes)

**Last Updated:** 2026-01-20

**Status:** Phase 2 Complete - Active Bug Fixing

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## Change Log

[2.5.0] - 2026-01-20 - Testing & Bug Fixes

**Status:** In Progress

### Fixes Applied:

- Fixed `SetLMenuValCompletedCB` → `SetLegacyMenuValidationCompleted` method name mismatch
- Validation now runs on correct row range (16-2009)
- All 9 header mappings verified working
- 150 rows processed successfully

### Known Issues Being Addressed:

Issue	Priority	Status	Description
Worksheet_Change Cascade	HIGH	Pending	Events re-triggering during bulk validation, causing 74s runtime for 150 rows
Simple Validation False Positives	HIGH	Pending	Valid values (Ontario, Canada, etc.) flagged as invalid
Pair Validation Inconsistencies	MEDIUM	Pending	Electricity/Plumbing pairs showing incorrect results
Heat Metered Column	LOW	Pending	Column not found during validation despite passing diagnostics

### Performance Baseline:

- 150 rows: 74.17 seconds (target: <10 seconds)
- Worksheet\_Change events: Thousands (target: 0 during bulk)

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### [2.4.0] - 2026-01-20 - Version Tracking & Diagnostics

**Status:** Complete

**Major Changes:**

- Added `MODULE_VERSION = "2.4"` constant for verification
- Enhanced diagnostic output in validation startup
- Fixed row range detection to use actual table bounds
- Created `Test4_v24_Diagnostics` module

**Key Fix:** Row range now correctly derived from `ListObject.DataBodyRange` instead of legacy cell references (B4/D4).

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### [2.3.0] - 2026-01-19 - Fully Table-Based Architecture

**Status:** Superseded

- Removed ALL legacy cell references
  - Added ValidationTargets table support
  - Auto-detects table row range from ListObject
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### [2.2.0] - 2026-01-16 - Phase 2 Complete

**Status:** Superseded

- AV\_Constants, AV\_DataAccess modules created
  - Table caching implemented
  - Multiple target support added
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### [2.0.0] - 2026-01-16 - Architecture Consolidation

**Status:** Superseded

- Consolidated 15-20 modules into 6 core modules
  - Split validation logic into Routing and Rules
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## Project Vision & Goals

### Primary Objectives

1. **Maintain Functionality:** All existing validations work correctly
2. **Table-Based Configuration:** No hardcoded cell references
3. **Performance:** <10 seconds for 150 rows
4. **Reusability:** Support multiple validation targets

### Current Focus (v2.5)

- Fix Worksheet\_Change cascade during bulk validation
  - Correct Simple Validation lookup logic
  - Ensure pair validations work correctly
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## Architecture (v2.5)

### Module Inventory

Module	Version	Status	Purpose
AV_Constants	2.1	 Stable	All constants centralized
AV_DataAccess	2.3	 Stable	Table operations layer
AV_Core	2.1	 Stable	Config, state, caching
AV_Engine	2.4.1	 Fixed	Orchestration (method name fix)
AV_Format	2.3	 Review	Formatting & feedback

Module	Version	Status	Purpose
AV_Validators	2.3	⚠ Review	Routing layer
AV_ValidationRules	2.1	⚠ Review	Business logic
AV_UI	2.1	✓ Stable	User interface
Test4_v24_Diagnostics	2.4	✓ Stable	Testing module

## Module Flow

```

RunFullValidationMaster()
|
    -> Application.EnableEvents = False ← CRITICAL for performance
    -> Load ValidationTargets table
    -> Find target table (ListObject)
    -> Auto-detect row range from DataBodyRange
|
    -> FOR EACH row:
        -> ValidateSingleRow()
        -> FOR EACH validation function:
            -> Application.Run("Validate_Column_X")
            -> AddValidationFeedback()
            -> WriteSystemTagToDropColumn()
|
    -> RunAutoCheckDataValidation() ← Simple dropdown checks
|
    -> Application.EnableEvents = True ← Re-enable at end only

```

## 1. ValidationTargets

**Purpose:** Defines which tables to validate

Column	Description
TableName	Name of Excel Table (ListObject)
Enabled	TRUE/FALSE
Mode	Both, Trigger, or Bulk
Key Column (Header Name)	Header name of ID column

### Current Configuration:

TableName	Enabled	Mode	Key Column
REP2DSMDraft_Buildings	TRUE	Both	AO ID
REP2DSMDraft_Works	TRUE	Both	AO ID
REP2DSMDraft_Other	TRUE	Both	AO ID

## 2. AutoValidationCommentPrefixMappingTable

**Purpose:** Maps advanced validation functions to columns

Column	Description
Dev Function Names	Function identifier (e.g., "Electricity")
ReviewSheet Column Header	Header name in target table
Drop in Column	Header for messages column
Prefix to message	English message prefix
(FR) Prefix to message	French message prefix
AutoValidate	TRUE to enable
RuleTableName	Optional rule table name

### Current Mappings (9 functions):

- GIWQuantity → Gender Inclusive Washrooms - Quantity
- GIWIcluded → Gender Inclusive Washrooms - Included
- Electricity → Electricity
- Electricity\_Metered → Electricity Metered
- Plumbing → Plumbing
- Water\_Metered → Water Metered
- Heat\_Source → Heat Source
- Heat\_Metered → Heat Metered
- Construction\_Date → Construction Date

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### 3. AutoCheckDataValidationTable

**Purpose:** Simple dropdown validations (menu field checks)

Column	Description
Column Name	English name
Column Name (FR)	French name
ReviewSheet Column Name	Header in target table
MenuField Column (EN)	Header in ENMenuSelectionMenuFields
MenuField Column (FR)	Header in FRMenuSelectionMenuFields
AutoCheck	TRUE to enable
AutoComment Column	Header for comment output

**Current Mappings (11 fields):**

- Building Type
- Main Usage Type
- Region (Province)
- Country
- Det/Sec (Detachment/Section)
- RP Ops Unit
- Asbestos Present (disabled)
- APS/UPS
- Steam Metered
- Barrier Free - Access - Mobility Access

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## 4. Validation Rule Tables

Table	Purpose
GIWValidationTable	GIW Included/Quantity rules
ElectricityPairValidation	Electricity/Metered valid pairs
PlumbingPairValidation	Plumbing/Water Metered pairs
HeatSourcePairValidation	Heat Source/Metered pairs
HeatSourceANYRefTable	Heat ANY mapping

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## Known Issues & Fixes

### Issue 1: Worksheet\_Change Cascade

**Symptom:** Thousands of change events fire during bulk validation **Impact:** 74 seconds for 150 rows

(should be <10s) **Root Cause:** Writing to drop columns triggers Worksheet\_Change events **Solution:**

Ensure `Application.EnableEvents = False` throughout validation

**Status:** Pending fix

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### Issue 2: Simple Validation False Positives

**Symptom:** Valid values like "Ontario", "Canada" flagged as invalid **Impact:** Incorrect error messages in drop columns

**Diagnostic Questions:**

1. Is GetDDMValidationColumns loading the valid value lists correctly?
2. Are the MenuField Column headers matching the actual headers in ENMenuSelectionMenuFields?
3. Is the comparison case-sensitive when it shouldn't be?

**Status:** Pending investigation

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### **Issue 3: Pair Validation Inconsistencies**

**Symptom:** Electricity/Plumbing pairs showing alternating errors **Impact:** Incorrect validation results

**Likely Cause:** The pair validation writes to both cells, and if events are enabled, it triggers re-validation which clears/re-adds errors.

**Status:** Likely related to Issue 1

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### **Issue 4: Heat Metered Column Not Found**

**Symptom:** Diagnostic says OK, but validation says "not found" **Impact:** Heat validation skipped

#### **Possible Causes:**

- Subtle character difference in column name
- Caching issue between diagnostic and validation
- Column exists in mapping but not in actual table

**Status:** Low priority - investigate after Issues 1-3 fixed

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## Testing

### Test Module: Test4\_v24\_Diagnostics.bas

Test	Purpose	Status
Test4_RunAll	Complete diagnostic suite	 Pass
Test4_Step1_VersionCheck	Verify AV_Engine v2.4	 Pass
Test4_Step2_ValidationTargets	Check config table	 Pass
Test4_Step3_TargetTableAnalysis	Analyze target table	 Pass
Test4_Step4_HeaderMappingCheck	Compare headers	 Pass
Test4_RunValidation	Execute validation	 Runs but with issues

### Test Results Summary (2026-01-20)

#### Diagnostic Results:

- AV\_Engine version: 2.4 
- ValidationTargets: 3 targets, all enabled 
- Target table: REP2DSMDraft\_Buildings 
- Table range: Row 16 to 2009 
- Key column: AO ID (150 rows with values) 
- Header mappings: 9/9 found 

#### Validation Results:

- Rows processed: 150 

- Runtime: 74.17 seconds  (too slow)
  - Worksheet\_Change events: Thousands 
  - False positives: Many 
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## Fix Plan

### Phase 2.5.1: Worksheet\_Change Fix

**Goal:** Eliminate event cascade during bulk validation **Approach:**

1. Add validation mode flag to distinguish bulk vs trigger
2. Ensure EnableEvents = False is maintained
3. Add toggle for Worksheet\_Change handler

### Phase 2.5.2: Simple Validation Fix

**Goal:** Correct the dropdown value lookup **Approach:**

1. Debug GetDDMValidationColumns to verify value loading
2. Check ENMenuSelectionMenuFields table structure
3. Verify column name matching

### Phase 2.5.3: Pair Validation Fix

**Goal:** Consistent pair validation results **Approach:**

1. Review ValidatePairedFields logic
2. Ensure both cells validated together
3. Test after event cascade fixed

## Developer Notes

### Adding Worksheet\_Change Toggle

#### Proposed approach:

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*' In AV\_Core or AV\_Engine*

**Public** BulkValidationInProgress **As Boolean**

*' In Worksheet code*

**Private Sub** Worksheet\_Change(**ByVal** Target **As Range**)

*' Skip if bulk validation is running*

**If** AV\_Core.BulkValidationInProgress **Then** Exit Sub

*' Normal trigger logic...*

**End Sub**

*' In RunFullValidationMaster*

AV\_Core.BulkValidationInProgress = **True**

*' ... validation code ...*

AV\_Core.BulkValidationInProgress = **False**

#### Key Principle

The bulk validation (`(RunFullValidationMaster)`) and trigger validation (`(Worksheet_Change)`) should not interfere with each other. During bulk validation:

- All events should be disabled
- No triggers should fire
- Only explicit validation calls should execute

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## Version Verification

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vba
```

```
Sub CheckVersions()
    Debug.Print "AV_Engine: " & AV_Engine.MODULE_VERSION
    'Should print: 2.4
End Sub
```

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## Support

**Documentation Version:** 2.5

**Last Updated:** 2026-01-20

**Status:** Active Development

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**END OF MASTER DOCUMENTATION v2.5**