

## Compliance Analysis Report FAC-008-1 Facilities Ratings Methodology FAC-009-1 Establish and Communicate Facility Ratings

February 19, 2010

### Background

The NERC Board of Trustees Compliance Committee (BOTCC) has encouraged NERC and the Regions (via the Regional Compliance Implementation Group, RCIG) to conduct assessments that analyze the most frequently violated standards. The primary purpose of these analyses is to provide information on compliance including reasons for violations and identification of process enhancements and lessons learned to assist Registered Entities in improving compliance and thus enhancing reliability. This report focuses on violations of NERC Reliability Standards FAC-008-1 (Facility Rating Methodology) and FAC-009-1 (Establish and Communicate Facility Ratings).

Since the implementation of the Compliance Monitoring and Enforcement Program (CMEP), FAC-008-1 and FAC-009-1 have been identified as two of the most frequently violated reliability standards. These reliability standards could have a significant impact on the reliability of the bulk electric system.

### Summary of Recommendations

As a result of these analyses, the Registered Entities need to focus on the following:

- Ensure that there is a statement in their Facility Ratings Methodology that their plan encompasses the most limiting applicable equipment rating.
- Verify that their Facility Ratings Methodology addresses both normal and emergency ratings.
- Check that all applicable equipment is covered in their Facility Ratings Methodology; relay protective devices and series and shunt compensation devices are the most commonly missed equipment.
- Include all assumptions, ambient conditions, operating limitations, and equipment ratings in the Facility Ratings Methodology.
- Make available ratings methodologies and respond to requests or comments from entities performing other functions of the BES.

- Check and verify that all facility ratings are current and consistent with the current Facility Ratings Methodology.

The attached two reports prepared by NERC (Exhibit A) and the Regional Compliance Implementation Group (RCIG) (Exhibit B) together provide various violation statistics, typical facts surrounding such violations, and suggestions for improvement.

# **Exhibit A**

# NERC

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

## Compliance Analysis Report Reliability Standard FAC-008 and FAC-009 Facility Ratings Methodology

to ensure  
the reliability of the  
bulk power system

Report Date: February 2010  
Data Effective as of August 2009

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# Analysis of FAC-008 and FAC-009 Violations

## 1. Background

FAC-008-1 and FAC-009-1 are intertwined standards and are focused on ensuring that Facility Ratings are used in the reliable planning and operation of the bulk electric system and in addition, are determined based on an established methodology or methodologies. These standards have a critical impact on the bulk electric system and continually rank in the top ten violated standards since June 18, 2007. As of August 19, 2009, there are 105 active/closed violations of FAC-008-1, 83 active/closed violations of FAC-009-1, with an additional 101 violations of both standards that have been dismissed by the Regions. This report focuses on the 188 active/closed violations.

NERC focused on developing the following metrics

- Identifying how many violations were reported by each Region for the time period of June 18, 2007 to the present;
- The prevailing method of discovery by the Regional Entity for each violation;
- An analysis of violations by the date of violation to determine if violations were clustered around certain months or years;
- A trending analysis of how many violations were submitted by month to determine if violation submission levels have reached a steady state, are increasing, or are decreasing;
- Key reasons for noncompliance cited by the Regional Entities classified by a bucket structure which will be further described later in this paper; and
- An analysis of those buckets to determine if the violations contained within still pose a threat to the bulk electric system.

## 2. FAC-008-1 Analysis

The first way to view the 105 violations of FAC-008-1 is by requirement level violated by the Registered Entity. Table 1 below shows how the 105 violations have been submitted to NERC according to requirement.

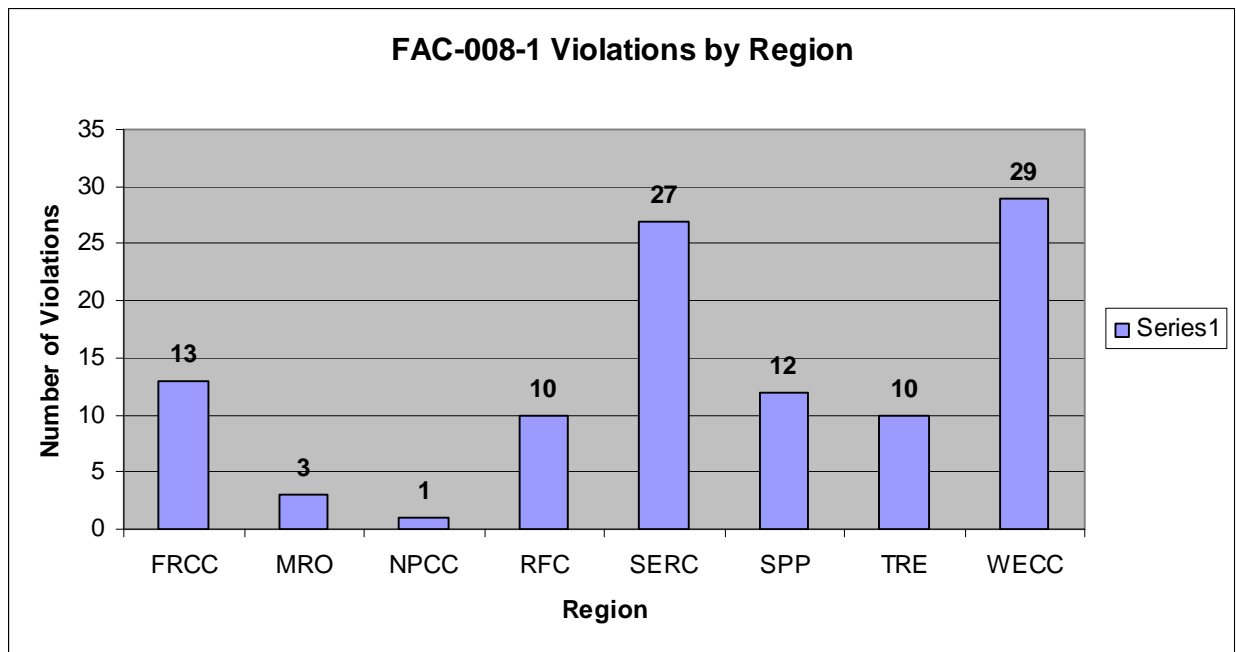
**Table 1**

<b>FAC-008-1 Analysis (contains sub level requirements)</b>	<b>Violations</b>	<b>Percentage</b>
R1 – Document methodology for Facility Ratings	80	76%
R1.1 – Statement of most limiting element	1	1%
R1.2 – Method by which the rating is determined	4	4%
R1.3 – Ratings, Conditions, Limitations, and Assumptions	1	1%
R2 – Make ratings available for review within 15 days	11	10%
R3 – Written response of comments within 45 days	8	8%
<b>Grand Total</b>	<b>105</b>	<b>100%</b>

This analysis reveals that requirement 1 and its sub requirements are the most frequently violated portion of reliability standard FAC-008-1 and comprise 82% of the reported violations. Requirement 1 focuses on documenting the methodology used to develop facility ratings and ensuring that all critical infrastructure elements are included in the plan.

The second task was to determine how the FAC-008-1 violations were spread across the Regional Entities. Figure 1 below illustrates these results in bar graph form.

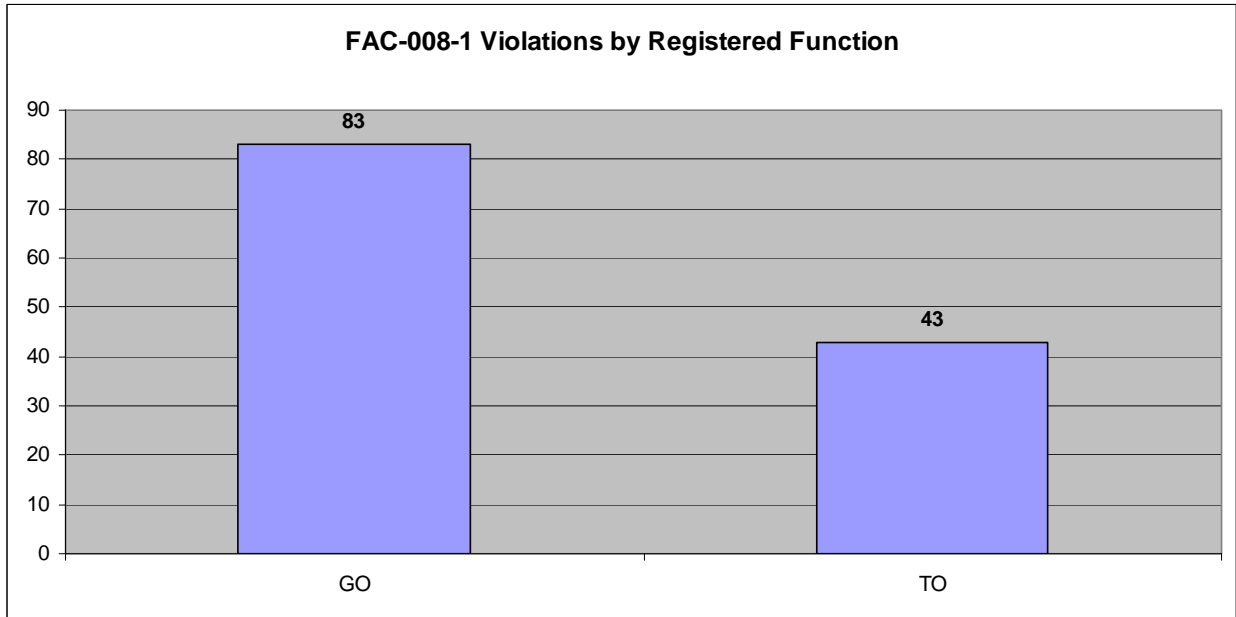
Figure 1



The WECC Region shows the highest number of FAC-008-1 violations reported (28%) but it should be noted that this Region covers the largest geographical area and the largest number of Registered Entities (467 out of 1,834 Registered Entities). Given this information, discovering the largest number of reported violations occurring in the WECC Region is not surprising.

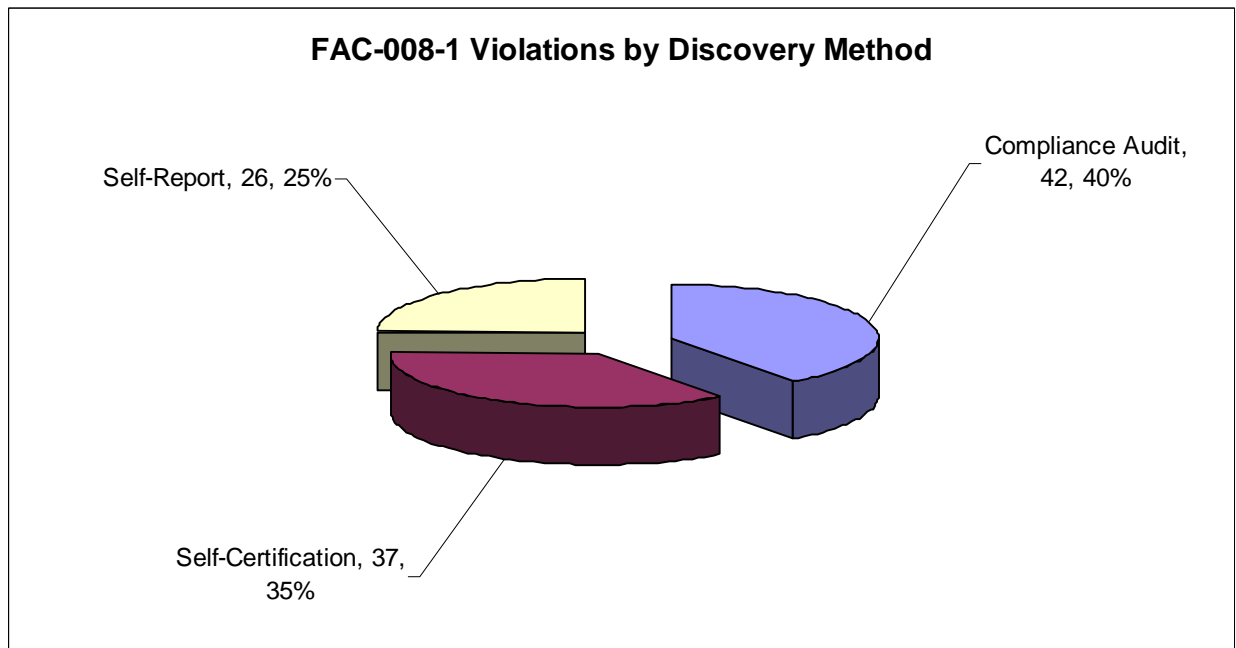
Since most Registered Entities are registered for more than one function, the total number of violations shown below will sum to a number greater than 105. Figure 2 below demonstrates the results of this analysis.

Figure 2



The 105 violations of FAC-008-1 were discovered by the Regional Entities in one of three forms: Compliance Audits, Self-Certifications, and Self-Reports. Figure 3 below graphically illustrates the distribution of the methods of discovery.

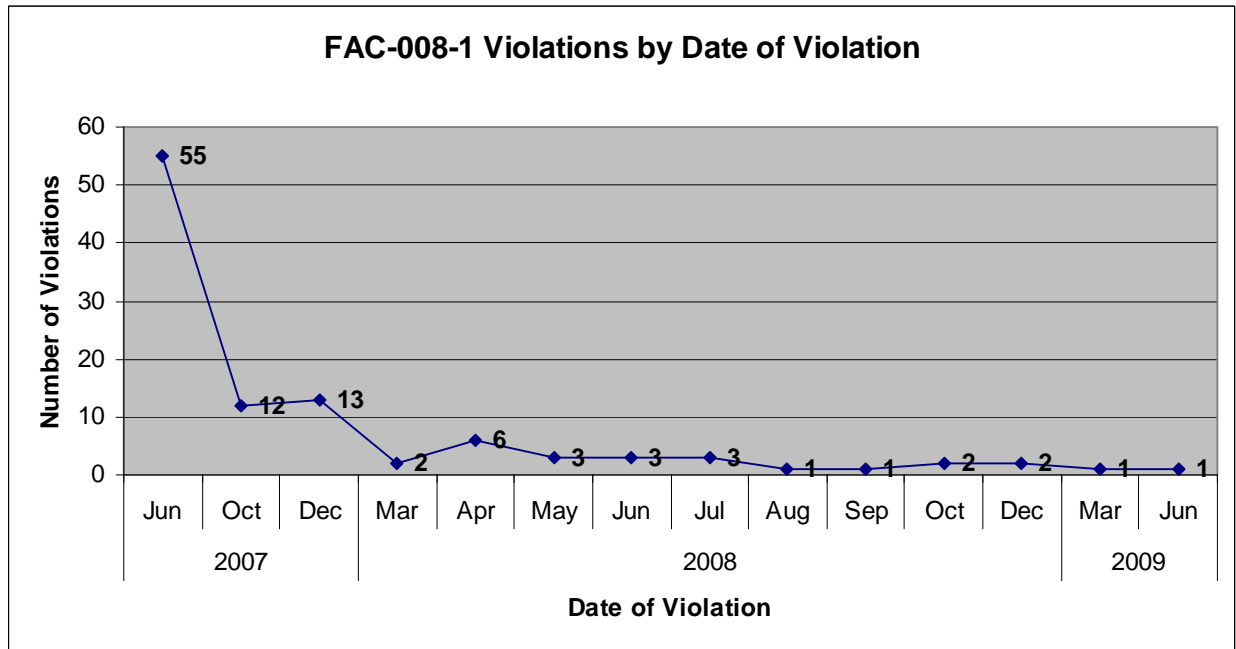
Figure 3



The results show that discovery methods are distributed instead of being clustered into one method. Compliance audits comprise the most frequent method of discovery in this analysis.

Figure 4 below shows FAC-008-1 violations graphed by the date of violation and shows a significant amount of clustering around June 2007. This is not an unexpected development with the initial wave of self-reported violations and as audits, investigations, and self-certifications would identify potential violations that have not been self-reported and subsequently corrected or mitigated.

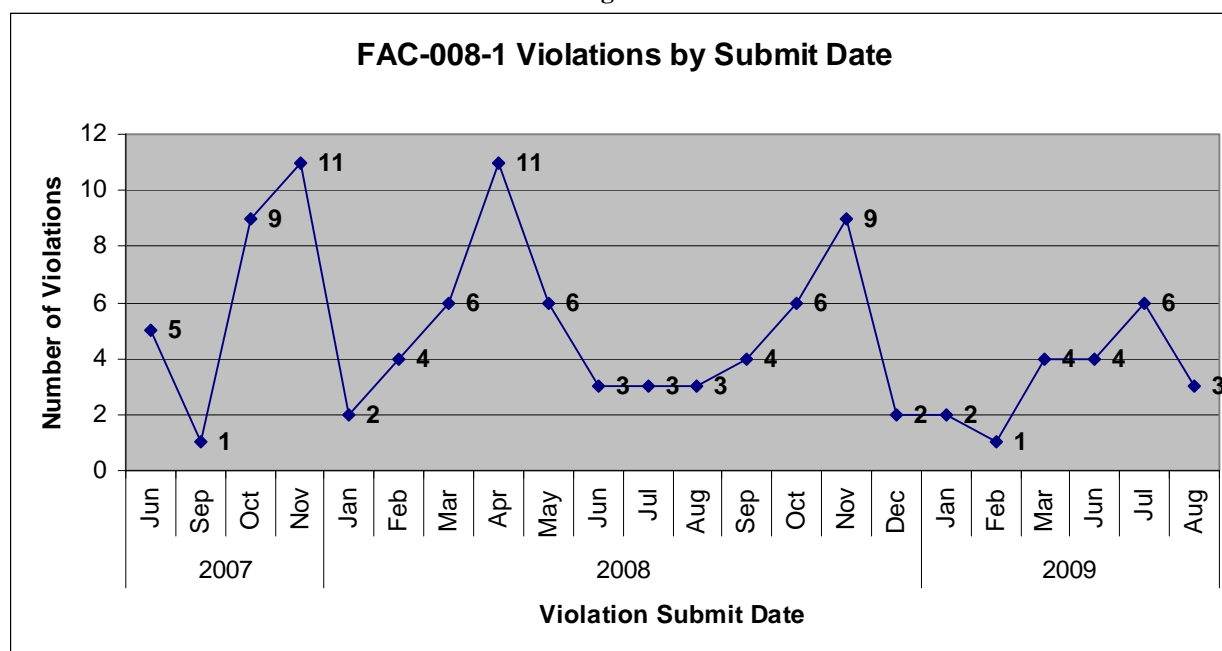
Figure 4



Violations for FAC-008-1 have been trending downward since June 2007, and it appears that the number of violations reported seem to have achieved steady state. However, there are two months that do not fit the trend line: December 2007 and April 2008. The peak in December 2007 is attributable to the reporting of four self-reports, eight self-certifications, and one compliance audit violation. The peak in April 2008 is attributable to five compliance audit violations and one self-report violation occurring.

While there is clustering of violations by the date of violation, there is no clear pattern when viewing the violations by their submission date to NERC, as Figure 5 below demonstrates.

Figure 5



There are three peak months of submittals to NERC of violations of FAC-008-1: November 2007, April 2008, and November 2008. The peak of November 2007 is attributable to nine violations being discovered by self-certifications and two violations being discovered through compliance audits. The peak of April 2008 is attributable to six violations being discovered through compliance audits, four violations being discovered through self-certifications, and one violation being self-reported.

Figure 4 and Figure 5 vary from each other because Regional Entities are required to report the actual date of occurrence of a violation and such date may not be the date the violation was discovered and subsequently submitted. While Regional Entities may have only recently discovered a violation, the violation could have existed in the bulk electric system for a significant period of time before discovery. This is the reason why Figure 4 and Figure 5 show different amounts of violations found and reported for each month.

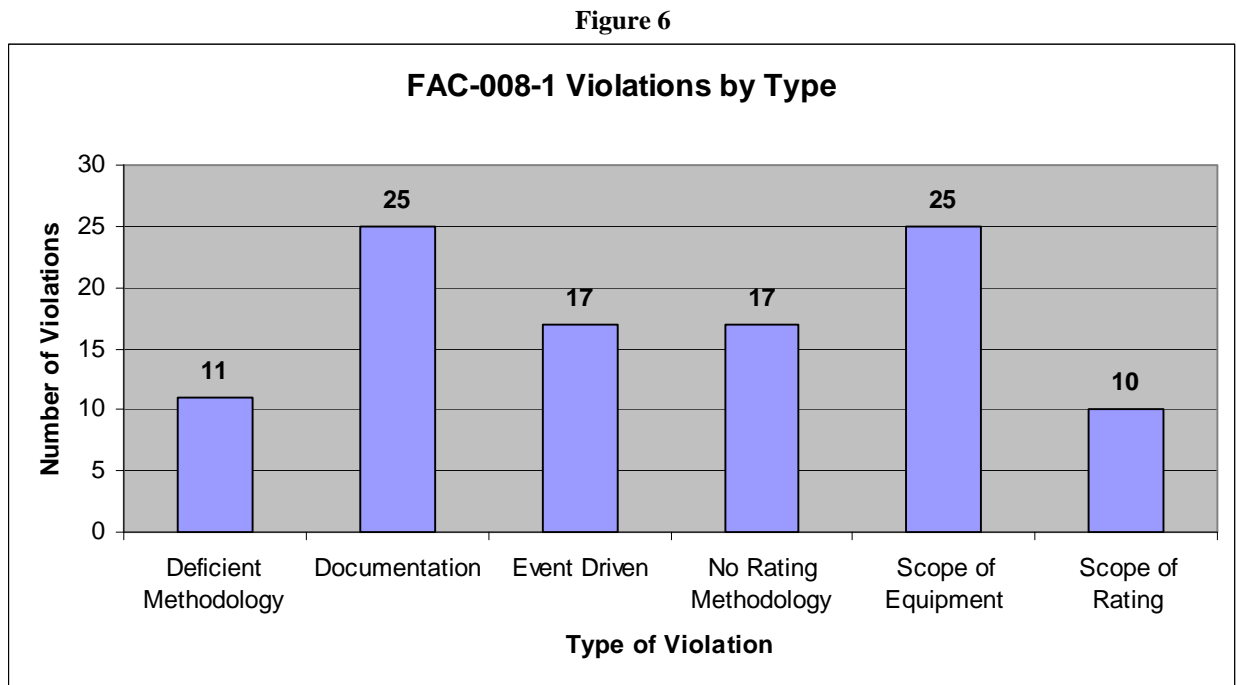
### FAC-008-1 Noncompliance Analysis

There are many forms of noncompliance by Registered Entities from documentation issues to performance-related issues. NERC classified the 105 violations of FAC-008-1 by six different types of violations given the information provided in the Violation Description and Potential Impact fields of the Regional workbook submissions to NERC. The classifications are:

1. *Deficient Methodology* – the Facility Rating methodology of the Registered Entity was significantly deficient;
2. *Documentation* – a lack of records to demonstrate compliance with the reliability standard;

3. *Event Driven* – The entity in violation could not provide the required documentation to required authorities in the given time frame;
4. *No Rating Methodology* – No facility rating methodology exists;
5. *Scope of Equipment* – Facility Rating program fails to account for all equipment required under the standard; and
6. *Scope of Rating* – Facility Rating program fails to address Normal or Emergency levels, or fails to address the most limiting equipment required by the standard

Figure 6 below represents the results of this basic classification structure:



The classifications of violations with the greatest reliability impact are those where no Facility Rating methodology currently exists at a Registered Entity and are represented above by “No Rating Methodology” classification. Currently, there are 17 violations classified under this category and of these, 12 have mitigation plans which have been verified complete by the Regions. The Registered Entities in question for these “No Rating Methodology” violations appeared to range in size from small to large and were found in five out of the eight Regions. Most of these violations did not appear to pose a significant or substantial risk to the reliability of the bulk electric system, given the Potential Impact statements prepared by the Regions. These “No Rating Methodology” violations were discovered in the following manner: ten were discovered through compliance audits, four were discovered through the self-certification process and three were reported to the Region via self-reports.

Scope of Equipment violations, which include violations where a significant piece of equipment was left out of the facility ratings, have the highest number of violations (25 out of 105, or 24 percent). From the violation descriptions provided by the Regions, entities typically did not

include relays, conductors, and terminal devices. The Registered Entities in question for these “Scope of Equipment” violations ranged from large to small with no clear pattern emerging based on the size of the entity. Scope of Equipment violations were most frequently detected and discovered through compliance audits (17 of 25) with four violations each being discovered by self-reports and self-certifications. Most violations of this type were deemed to be of minimal impact to the bulk electric system with three violations being deemed to be of moderate impact and one being deemed severe impact. The severe impact violation occurred in a smaller entity in the RFC footprint.

Deficient Methodology violations focused on violations in entities where there was an existing Facility Rating but methodology used was either deficient or their facility rating methodology was in the process of being updated. Most of these violations were classified as minimal impact violations by the Regions and the violations occurred in entities large and small. These violations do not pose a serious, immediate risk to the bulk electric system but do need to be quickly mitigated. As of August 19, 2009, seven violations of this nature had complete and closed mitigation plans while the other three violations of this type were operating under approved mitigation plans.

Scope of Rating violations mostly were centered around missing a critical statement in entities’ Facility Rating plan which indicated the rating was based on the limiting element of their entire operation or that their ratings failed to include loads at normal and emergency levels. These violations, while important to the reliability of the bulk electric system, were deemed to be of minimal impact by Regional Entities.

Event-driven violations were violations of R2 and R3 of the standard which focused on entities not being able to meet the required request and response deadlines to authorities. Violations of this type usually occurred when Registered Entities violated Requirement 1 of FAC-008-1. These violations were all deemed to be of minimal impact to the bulk electric system by the Regional Entities.

Documentation violations occurred where the entity had a facility rating plan but did not have the proper documentation to match the requirements of standard FAC-008-1. Violations of this type were not statistically insignificant (25 out of 105, or 24 percent) but posed no threat to the bulk electric system. All violations of this nature were rated to have a minimal potential impact by the Regional Entities.

### **3. FAC-009-1 Analysis**

The first way to view the 83 violations of FAC-009-1 is by requirement level violated by the Registered Entity. Table 2 below shows how the 83 violations have been submitted to NERC according to requirement.

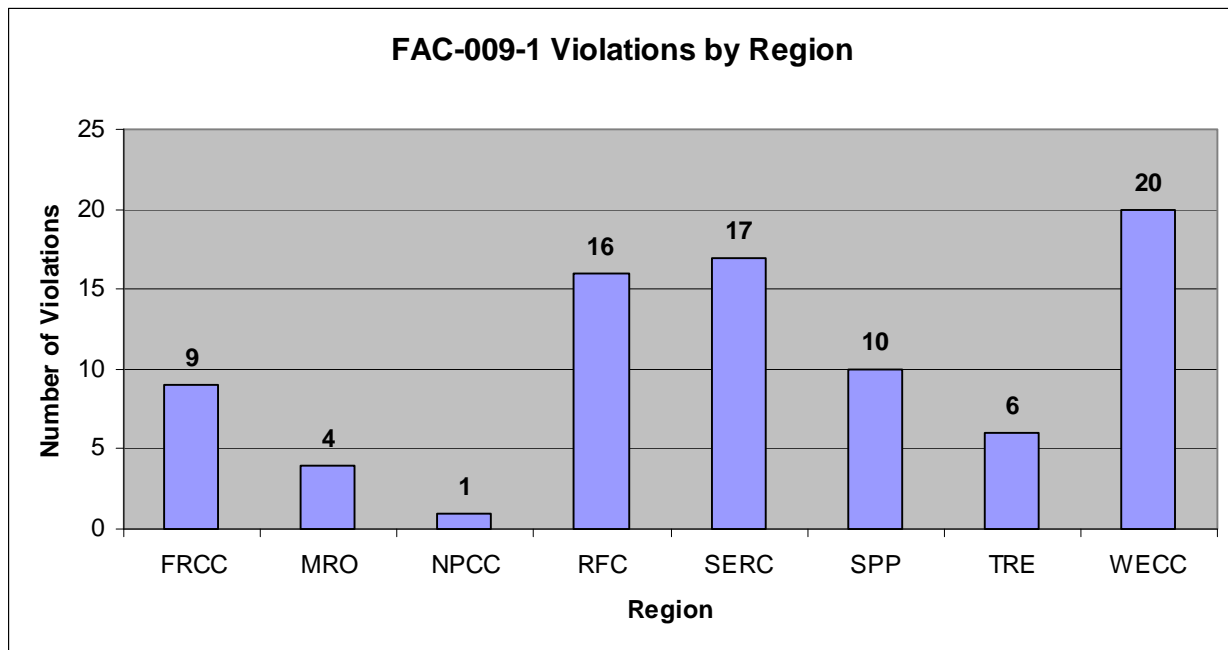
**Table 2**

<b>FAC-009-1 Analysis</b>	<b>Violations</b>	<b>Percentage</b>
R1 – Establish Ratings for Solely and Jointly owned Facilities	73	88%
R2 – Must provide ratings for facilities that are existing, new, re-rating required, and/or modified	10	12%
<b>Grand Total</b>	83	100%

This table demonstrates that a large percentage of violations for FAC-009-1 (nearly 88 percent) are R1 violations, which indicates that Registered Entities did not establish ratings for their solely and jointly owned facilities that are consistent with their Facility Ratings Methodology. This is a significant infraction due to the importance that facility ratings play in planning and loading of the bulk electrical system on a daily basis.

The second task was to determine how the FAC-009-1 violations were spread across the Regional Entities. Figure 7 below illustrates these results in bar graph form.

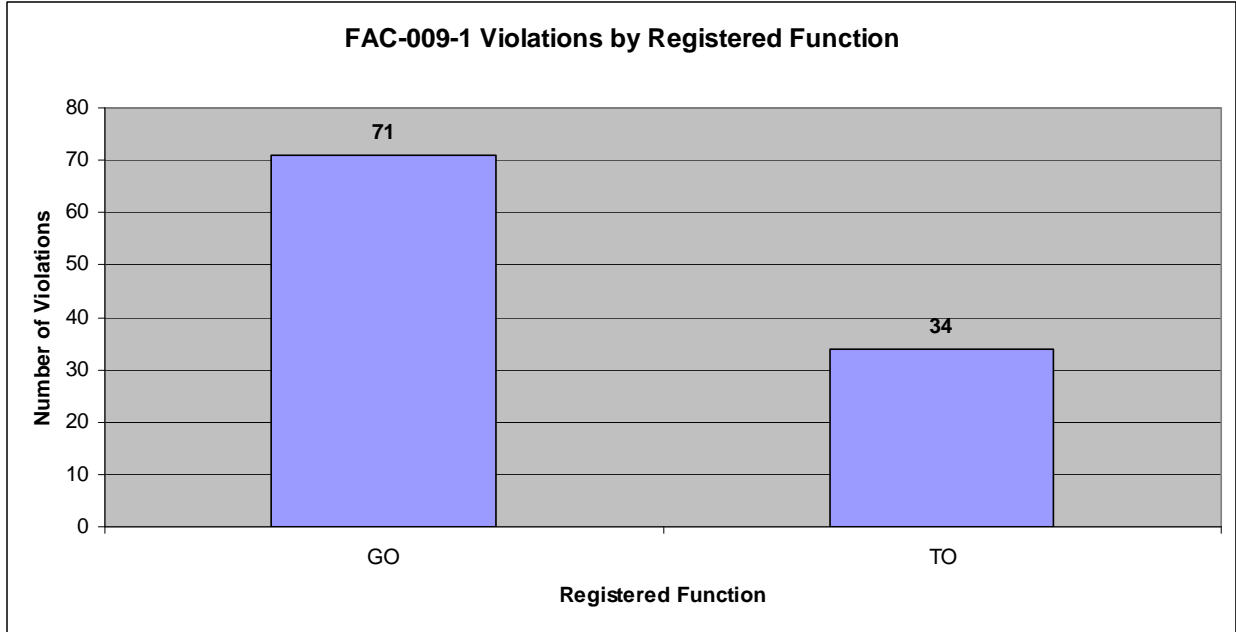
**Figure 7**



Once again, the WECC Region represents a significant portion of the FAC-009-1 violations (24 percent) while SERC (21 percent) and RFC (19 percent) represent a significant percentage in the analysis of this standard.

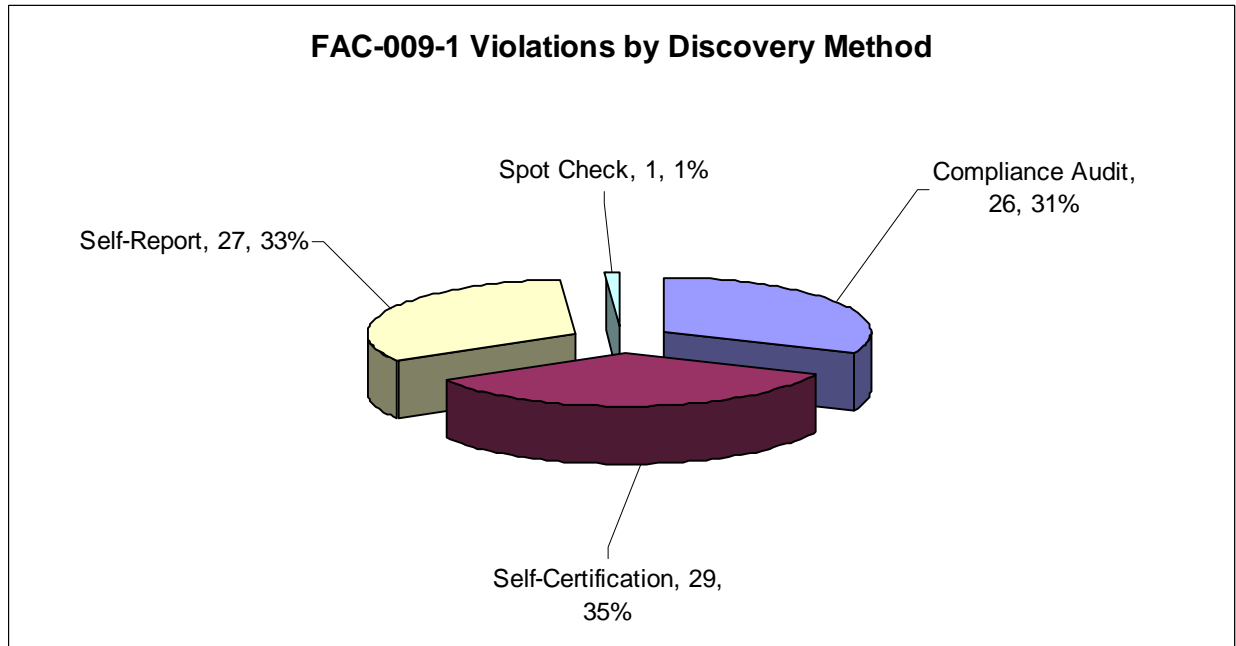
Since most Registered Entities are registered for more than one function, Figure 8 below will sum to more than the 83 violations this analysis is covering.

**Figure 8**



The 83 violations of FAC-009-1 were discovered by the Regional Entities in one of four different methods. Figure 9 below graphically demonstrates the distribution of the method of discovery.

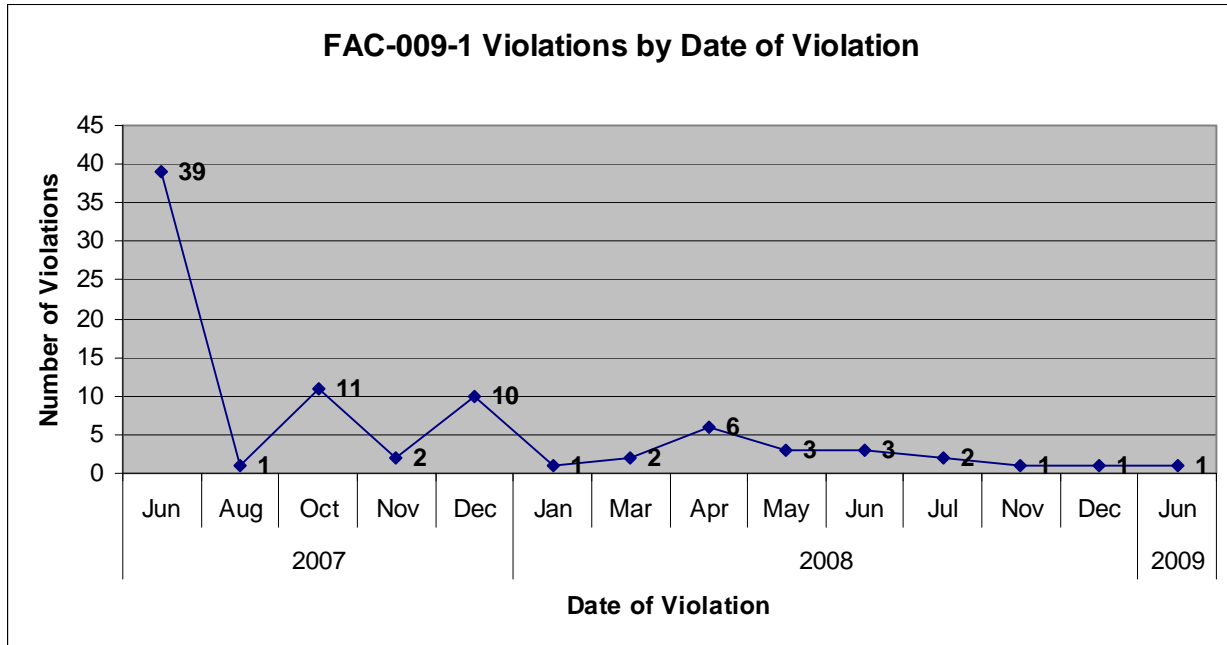
Figure 9



The results of this analysis show that almost all of the 83 violations were discovered in one of three normally distributed methods through compliance audits, self-certifications, or self-reports.

Figure 10 below shows FAC-009-1 violations graphed by the date of violation, and shows a significant amount of clustering around June 2007 (as previously analyses have shown). This is not an unexpected development.

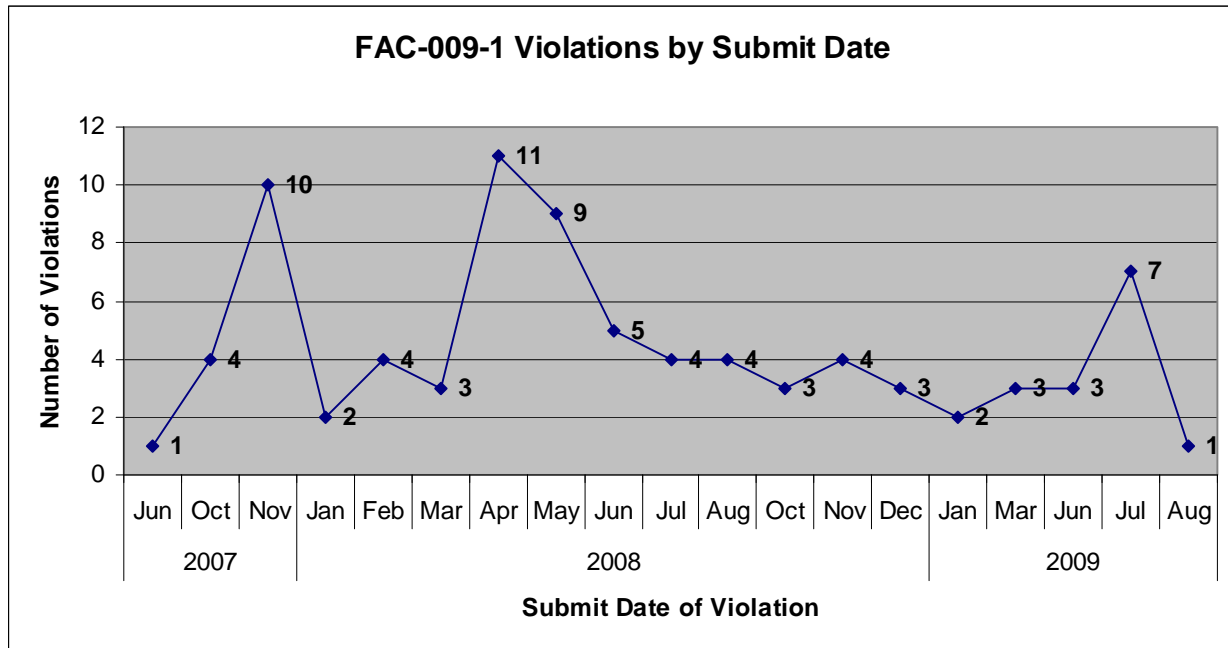
Figure 10



Violations have been trending downward since June 2007 with significant differences from the trend in October 2007 and December 2007. The significant number of violations in October 2007 and December 2007 is attributable to a number of entities going through the self-certification process at that time

While there is clustering of violations by the date of the violation, there is no discernable pattern when viewing the violations by their submission date to NERC as Figure 11 below demonstrates.

Figure 11



There are two months where there is a significant spike in violations by submit date: November 2007 and April 2008, with both of these months having unique discovery characteristics. November 2007 can be characterized as having a significant amount of violations reported through the self-certification process (6) and other violations attributable to self-reports (2) and compliance audits (2). April 2008 is characterized by being dominated by discovery through compliance audits (6), with (4) violations being discovered through self-certifications and one violation being self-reported (1).

Figure 10 and Figure 11 vary from each other because Regional Entities are required to report the actual date of occurrence of a violation and such date may not be the date the alleged violation was discovered and subsequently submitted. While Regional Entities may have only recently found or discovered a violation, the violation could have existed in the bulk electric system for a significant period of time before discovery. This is the reason why Figure 10 and Figure 11 show different amounts of violations found and reported for each month.

**FAC-009-1 Non-Compliance Analysis**

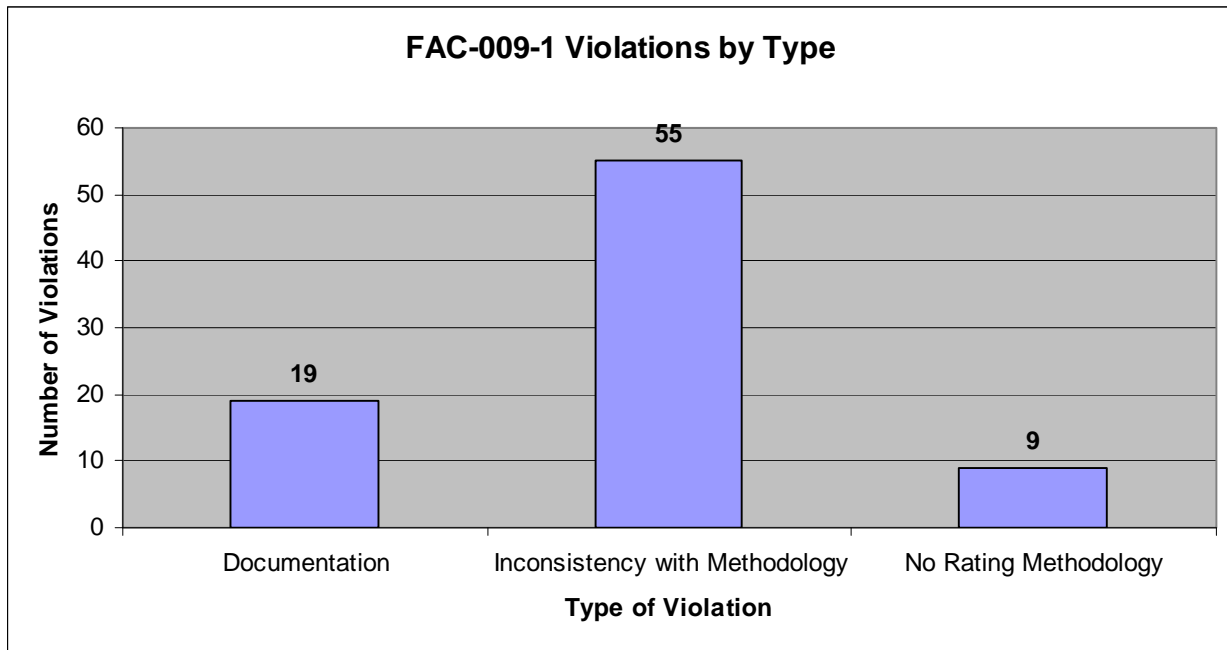
Noncompliance with FAC-009-1 most often stems from noncompliance of FAC-008-1 and this analysis will try to show how violations of these standards tie together. NERC classified the 83 violations of FAC-009-1 by three different types of violations, given the information provided in the Violation Description and Potential Impact fields of the Regional workbook submissions to NERC. The classifications are:

1. *Documentation* – a lack of records to demonstrate compliance with the reliability standard;

2. *Inconsistency with Methodology* – Facility Ratings were not consistent with the Facility Rating methodology established under reliability standard FAC-008-1; and
3. *No Rating Methodology* – No Facility Rating methodology exists for an entity.

Figure 12 below represents the results of this basic classification structure.

**Figure 12**



The classifications of violations with the greatest reliability impact are those where no documented Facility Rating program currently exists and are represented above by “No Rating Methodology.” Currently, there are nine violations classified under this category and of these, five have closed mitigation plans. The Registered Entities who have committed FAC-009-1 violations are smaller in size and are found in four of the eight Regions. Most of these violations did not appear to pose a significant or substantial risk to the reliability of the bulk electric system, given the Potential Impact statements prepared by the Regions. The primary method of discovery for violations of this type was through self-certifications (4).

Inconsistency with Methodology violations covered violations where the Registered Entity’s Facility Ratings were not consistent with the Facility Rating methodology established under FAC-008-1. Currently, 55 of 83, or 66 percent of violations are classified under this classification for this standard and violations classified in this bucket were found in Registered Entities large and small with no clear and consistent pattern. Potential Impacts determined by the Regions ranged from minimal to severe with a large number falling under the minimum category. The most frequent method of discovery for violations of this type were through compliance audits (24 violations), self-reports (14), self-certifications, and spot-checks (1).

The last classification, Documentation violations, comprised the second highest number of violations (19 of 83, or 23 percent) and covered areas where the Registered Entity had an insufficient amount of documentation to show compliance with the reliability standard. The potential impact statements prepared by the Regions assessed all of these violations at the minimal level and occurred in Registered Entities small and medium, but it appeared to be concentrated in entities smaller in size. Violations of this nature were most often discovered through self-certifications (11 out of 19), with the remaining eight violations being discovered through self-reports.

#### **4. Conclusion**

NERC Reliability Standards FAC-008-1 and FAC-009-1 were introduced to mandate that Registered Entities develop ratings for their facilities that are consistent with the acceptable rating methodologies. As this analysis has shown, entities which have violated these reliability standards had done so in a myriad of ways from not properly documenting their plans to not including critical equipment in their facility ratings. While violation submittals to NERC have not appeared to reach a steady state, the date of violation seems to have consistency with a majority of violations reported to NERC clustered around June 2007 for both standards. All violations reported in June 2007 were discovered in of three ways: compliance audits (40 of 94, 43 percent), self-reports (34 of 94, 36 percent), and self-certifications (20 of 94, 21 percent). NERC and the Regional Entities need to continue to actively monitor and enforce these reliability standards as both are critical to the reliability of the bulk electric system.

#### **5. Recommendations**

After reviewing 188 violations of FAC-008-1 and FAC-009-1, the following recommendations can be made:

1. Entities need to ensure that there is a statement in their Facility Ratings plan that their plan encompasses the most limiting applicable equipment rating.
2. Entities need to verify that their Facility Rating plan addresses both normal and emergency ratings.
3. Entities should verify that all applicable equipment is covered in their Facility Rating plan and that all assumptions, ambient conditions, operating limitations, and equipment ratings are included as well.

#### **FAC-008-1 – Violation Descriptions**

The recommendations listed above are based off of violation descriptions submitted by the Regional Entities which included:

##### **Deficient Methodology**

*“The Registered Entity has a methodology for determining equipment ratings, but does not meet the standard as written. Current methodology includes a combination of manufacturers' data and equipment testing, but does not satisfy the requirements of this standard.”*

#### Documentation

*“The Registered Entity did not document its current methodology used for developing Facility Ratings.”*

#### Event Driven

*“The Facility Ratings Methodology does not address both Normal and Emergency Ratings or the Facility Ratings Methodology was not made available for inspection within 15 business days of receipt of a request.”*

#### No Ratings Methodology

*“Entity is unable to provide evidence of a single written Facility Ratings Methodology that meets all the requirements of RI.”*

#### Scope of Equipment

*“The Registered Entity's Facility Rating Methodology does not include terminal equipment. To properly determine the facility rating, it must also include breakers and disconnect switches.”*

#### Scope of Rating

*“Entity failed to include within its Facility Ratings Methodology the scope of Ratings for both Normal and Emergency ratings from June 18, 2007, to June 14, 2008.”*

### **FAC-009-1 – Violation Descriptions**

#### Documentation

*“Documentation specifications and performance test data are not readily available to quickly establish Facility Rating.”*

#### Inconsistency with Methodology

*“Evidence that Facility Ratings were established consistent with the methodology in FAC-008 was not provided.”*

#### No Ratings Methodology

*“The Registered Entity did not establish facility ratings for each of its owned facilities.”*

# **Exhibit B**



**RCIG**

**REGIONAL COMPLIANCE IMPLEMENTATION GROUP**

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**RCIG  
Assessment  
Monitoring and Implementation  
Of**

**FAC-008-1  
Facility Ratings Methodology**

**&**

**FAC-009-0-1  
Establish and Communicate Facility Ratings**

Prepared by: Regional Compliance Implementation Group (RCIG)  
February 4, 2010  
REMG Approved February 5, 2010

## **Introduction**

Since the implementation of the Compliance Monitoring and Enforcement Program (CMEP), FAC-008-1 (Facilities Rating Methodology) and FAC-009-1 (Establish and Communicate Facility Ratings) have been identified as two of the more frequently violated Reliability Standards. These Reliability Standards have a high Violation Risk Factor (VRF) and could have a significant impact on the reliability of the bulk electric system. NERC, its Members Representative Committee, and many other organizations have indicated a strong interest in examining the implementation of these standards, assessing enforcement efforts to determine the reasons for the frequent violations of these standards, and providing guidance to the Registered Entities to improve compliance with these standards.

This Assessment is intended to examine Standards FAC-008-1 and FAC-009-1 and to provide more understanding of common reasons for violations that Regional Entities have been seeing when monitoring these standards. The NERC Board of Trustees Compliance Committee (“BOTCC”) engaged the RCIG and NERC staff to develop assessments based on the most-frequently violated Standards, based on the Regions’ experience in the current monitoring of these standards. This assessment is offered for the purpose of improving compliance and thus enhancing reliability.

## **FAC-008-1 Facilities Methodology Standard**

FAC-008-1 includes requirements that apply to entities registered for the functions of Transmission Owner (TO) and/or Generator Owner (GO).

In general, the standard requires that the TO and GO have a Facilities Rating Methodology, including information on Facility Rating limitations, the method for rating equipment, ensuring that the rating information is available to the Reliability Coordinators, Transmission Operators, Transmission Planners, and Planning Authorities, and considers their input when developing an entity’s Facility Ratings.

Specifically the Standard states:

**R1.** The Transmission Owner and Generator Owner shall each document its current methodology used for developing Facility Ratings (Facility Ratings Methodology) of its solely and jointly owned Facilities. The methodology shall include all of the following:

**R1.1.** A statement that a Facility Rating shall equal the most limiting applicable Equipment Rating of the individual equipment that comprises that Facility.

**R1.2.** The method by which the Rating (of major BES equipment that comprises a Facility) is determined.

**R1.2.1.** The scope of equipment addressed shall include, but not be limited to, generators, transmission conductors, transformers, relay protective devices, terminal equipment, and series and shunt compensation devices.

**R1.2.2.** The scope of Ratings addressed shall include, as a minimum, both Normal and Emergency Ratings.

**R1.3.** Consideration of the following:

**R1.3.1.** Ratings provided by equipment manufacturers.

**R1.3.2.** Design criteria (e.g., including applicable references to industry rating practices such as manufacturer's warranty, IEEE, ANSI or other standards).

**R1.3.3.** Ambient conditions.

**R1.3.4.** Operating limitations.

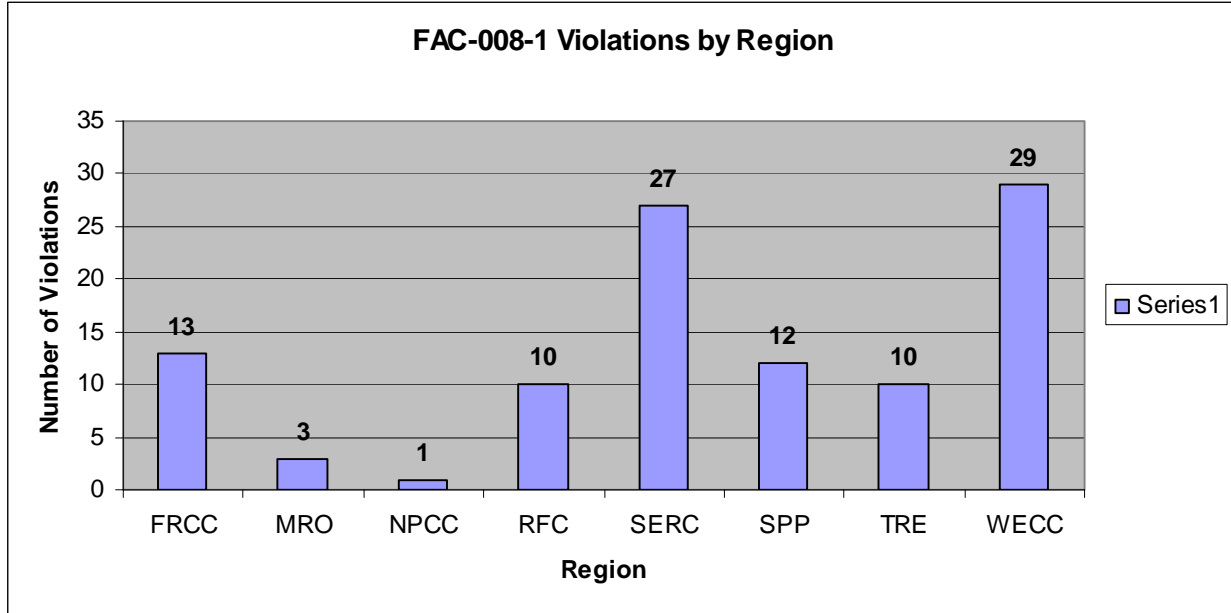
**R1.3.5.** Other assumptions.

**R2.** The Transmission Owner and Generator Owner shall each make its Facility Ratings Methodology available for inspection and technical review by those Reliability Coordinators, Transmission Operators, Transmission Planners, and Planning Authorities that have responsibility for the area in which the associated Facilities are located, within 15 business days of receipt of a request.

**R3.** If a Reliability Coordinator, Transmission Operator, Transmission Planner, or Planning Authority provides written comments on its technical review of a Transmission Owner's or Generator Owner's Facility Ratings Methodology, the Transmission Owner or Generator Owner shall provide a written response to that commenting entity within 45 calendar days of receipt of those comments. The response shall indicate whether a change will be made to the Facility Ratings Methodology and, if no change will be made to that Facility Ratings Methodology, the reason why.

## **FAC-008-1 Facilities Rating Methodology Assessment**

NERC has received 105 violations of FAC-008-1 as of mid 2009. Below is a graphical representation of the number of violations by region provided by NERC<sup>1</sup>.

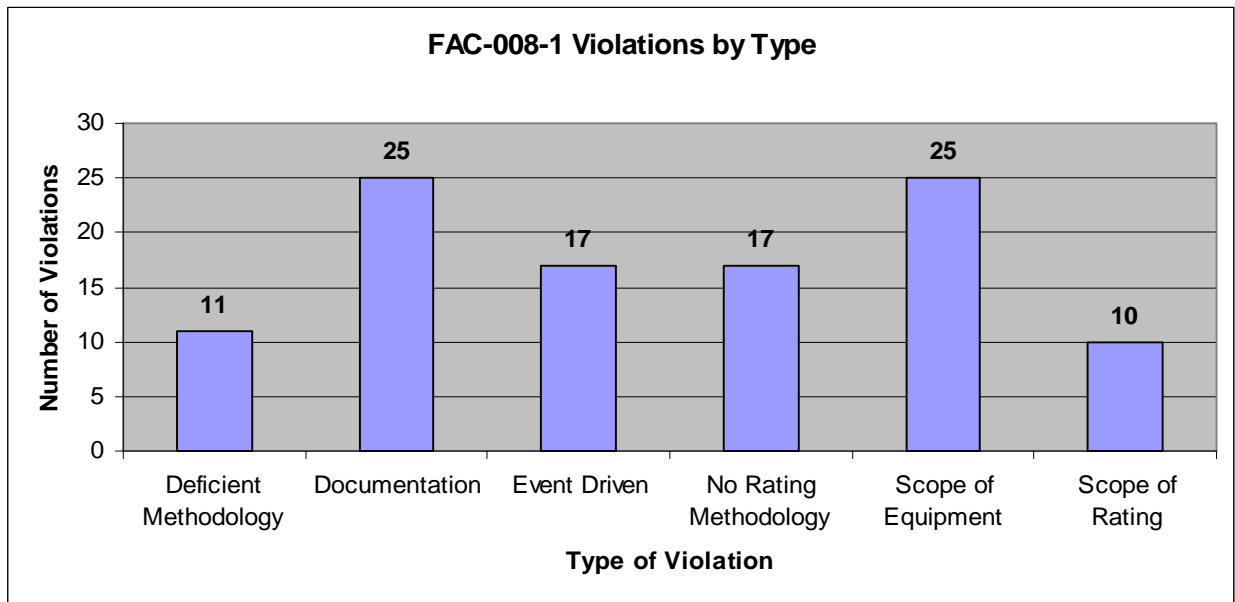


<sup>1</sup> [NERC Compliance Analysis Report, Reliability Standards FAC-008 and FAC-009]

## **Key Reasons for Noncompliance**

Of the 105 violations recorded, Requirement R1 had 86 violations, Requirement R2 had 11 violations, and Requirement R3 had 8 violations.

An analysis performed by NERC and summarized in the graph below<sup>2</sup> depicts the top reasons that Regional Entities have identified or found in violation for Requirement 1, 2, or 3 of FAC-008-1. Each of these causes is further discussed below in the Discussion of Violations and Lessons Learned section of this paper.



<sup>2</sup> ['NERC Compliance Analysis Report, Reliability Standards FAC-008 and FAC-009, Facility Ratings']

## **FAC-008-1 Discussions of Violations and Lessons Learned**

For each type of violation, as represented in the graph above, typical facts learned from past regional audits or other monitoring methods are noted and suggestions for improvement are offered, based on the experience to date of the regional compliance staffs.

As represented in the graph above, the most identified reasons for violations are:

- Deficient Methodology
- Documentation
- Event Driven
- No Rating Methodology
- Scope of Equipment
- Scope of Rating

Most of these violations are related to Requirement 1; the Event Driven violations fall under Requirements 2 and 3.

**Deficient Methodology** - Requirement 1 requires each Applicable Entity to have a Facility Ratings Methodology, to have the methodology documented, and to address all the requirements of R1.

In some regions it has been noted the GOs approach to rating BES equipment has mainly been based upon the rating of the generator. The standard requires that the GO provides the rating for each piece of equipment within the facility, from the generator to the interconnection with the TO. It appears TO's, perhaps as a result of their greater experience with electrical rating of equipment indentified in R1.2.1, have had fewer violations in this category.

Requirement R1.2 states that the TO and GO shall "include the method by which a rating is determined." Therefore, it is important for entities to document the method and the basis for developing all rating methodologies. The Regional Entities have seen cases where TOs and GOs have not provided any methodologies, or have rated equipment only according to its loadability. In some cases, for example, entities' ratings did not include relay protective devices and series and shunt compensation devices.

A common area of misunderstanding seems to be relay protection device ratings. For example, regional compliance staffs have identified cases where Registered Entities provided the relay trip setting of the relay protection device as the Facility Rating; however, the relay setting is not typically the rating that would cause a failure on this piece of equipment. Rather, the relay setting is the value or trip point when the relay will initiate an action. (Note: If the relay setting is below the thermal rating of the facility, then that setting does limit the rating of the facility and should be noted as the rating of the facility.) The relay *rating*, in contrast, provides a threshold of loadability whereby a piece of equipment can safely operate without risking a failure.

**Documentation** – Many violations of FAC-008-1 exist because entities have not rated and documented, within their Facility Rating Methodology, all of the types of equipment listed in

R1.2.1. Registered Entities must use a methodology to rate all components that are part of the requirement R1, state how each component is being addressed, and document how the entity determined each rating.

Registered Entities might consider instituting, as part of their internal compliance program, more explicit methods to identify all components required in any particular rating. This effort could include a thorough inventory of equipment requiring ratings, which the entity can cross reference when doing a self assessment of its compliance with documentation requirements. It is important to remember that all requirements must be addressed and documented even if the Registered Entity believes a requirement may not apply to a particular piece of equipment.

Requirement 1 clearly states the TO and GO shall “document” its current methodology. Thus, verbal attestations, agreements, understandings, or merely directly copying the language of the standard requirements to document the entity’s methodology are unacceptable forms of evidence of compliance and generally will not be accepted by auditors unless documentation is available which can substantiate these forms of evidence.

**Scope of Equipment** - Regions have found violations where entities did not include all of the equipment identified in the requirements of R1. That requirement is the minimum list of equipment to be addressed in entities’ ratings and methodologies. The standard requires the TO and GO to include, as a minimum, all equipment identified in R1.2.1. Relay protective devices and series and shunt compensation devices are the most commonly missed equipment.

**Scope of Rating** – Facilities Rating Methodologies must include the Normal and Emergency Ratings, as stated in R1.2.2. In many cases, TOs and GOs did not address both ratings when developing rating methodologies. Some entities believe that if both ratings are not separately identified, this implies that the single rating meets both requirements (normal and emergency). In addition, their procedures do not mention normal and emergency ratings. All equipment must be addressed and documented in the methodology even if, for example, the Normal rating is considered to be the same as the Emergency rating.

**No Rating Methodology** – Some Facilities Ratings Methodologies have not included ratings for all equipment identified in R1.2.1, and in some cases did not include additional equipment which was found as part of its circuit. The intent of the standard is to ensure that all equipment that is a part of a BES circuit is addressed in the entities Facility Rating Methodology. (Notice the quote in R1.2: “The method by which the Rating (of major BES equipment that comprises a Facility) is determined.”)

**Event Driven** – Violations for this category violate Requirements 2 and 3, which require the GO and TO to make their ratings methodologies available and to respond to requests or comments from entities performing other functions of the BES. In some cases, the TO and GOs did not complete or document completion of the actions required by R2 and R3. If no actions have been requested, then management should so attest, and such written attestations generally would be adequate to show compliance. If any actions were requested, e-mails, logs, letters, voice recordings, etc., can be used as evidence of compliance.

## **FAC-009-1- Establish and Communicate Facility Ratings Standard**

Standard FAC-009-1 applies to entities registered for the functions of Transmission Owner (TO) and/or Generator Owner (GO).

In summary, R1 requires that GOs and TOs apply the ratings methodologies developed under FAC-008 to their solely or jointly owned facilities. Requirement R2 ensures that the rating information is available to the appropriate entities such as Reliability Coordinators, Transmission Operators, Transmission Planners, and Planning Authorities, in order to increase the reliable operations of the system.

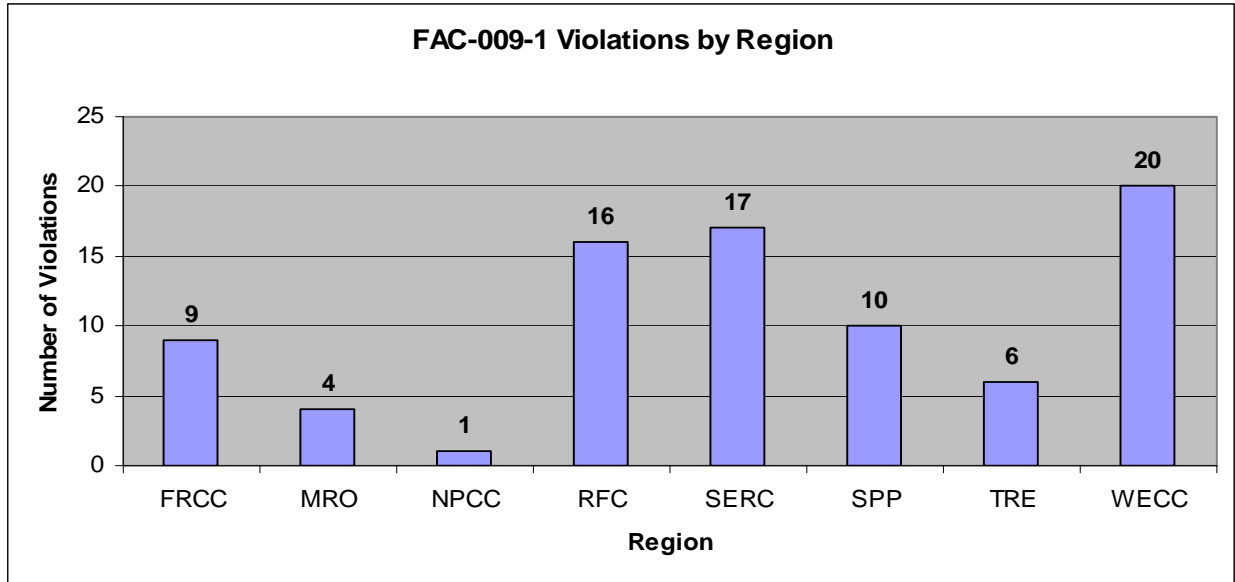
Standard FAC-009-1 states:

**R1.** The Transmission Owner and Generator Owner shall each establish Facility Ratings for its solely and jointly owned Facilities that are consistent with the associated Facility Ratings Methodology.

**R2.** The Transmission Owner and Generator Owner shall each provide Facility Ratings for its solely and jointly owned Facilities that are existing Facilities, new Facilities, modifications to existing Facilities and re-ratings of existing Facilities to its associated Reliability Coordinator, Planning Authority, Transmission Planner, and Transmission Operator as scheduled by such requesting entities.

## **FAC-009 -1 Establish and Communicate Facility Ratings Assessment**

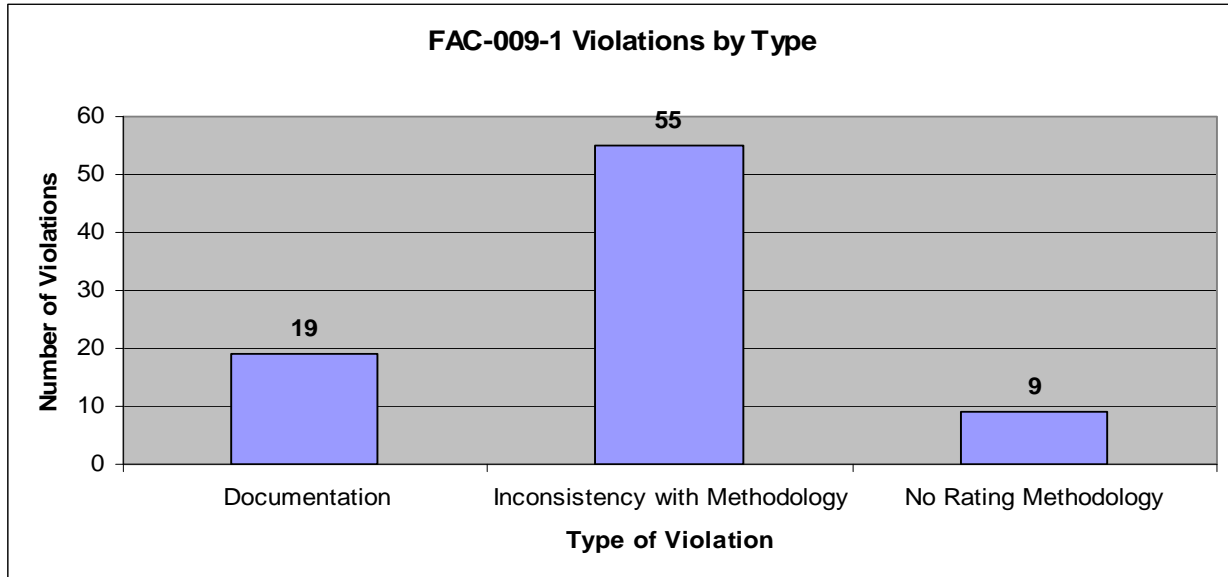
In a recent review of the violations of FAC-009-1, NERC received 83 violations. Below is a graphical representation of the number of violations by region<sup>3</sup>.



<sup>3</sup> ['NERC Compliance Analysis Report, Reliability Standards FAC-008 and FAC-009, Facility Ratings']

## **Key Reasons for Non-Compliance**

Of the 83 violations reported, 73 violated R1 and 10 violated R2. NERC analyses<sup>4</sup> categorize the primary types of violations of FAC-009-1, as shown below:



## **FAC-009-1 - Discussion of Violations and Lessons Learned**

For each of the following categories of violations, typical facts learned from past regional audits or other monitoring methods are noted and suggestions for improvement are offered, based on the experience to date of the regional compliance staffs.

As represented in the graph above, the most identified reasons for violations are:

- Inconsistency with Methodology
- No Rating Methodology
- Documentation

**Inconsistency with Methodology** – Findings associated with the violation type reveal that some entities are not following their documented Facility Ratings Methodology, or are using an out of date methodology. One suggestion offered for improvement is that entities, in developing and revising their internal compliance programs, ensure that checks are in place to verify that all facility ratings are current and are consistent with the current ratings methodology document. Because entities may have a very large number of facilities and facility ratings, it may be good practice for entities to conduct a rating review annually to ensure that all ratings and records

<sup>4</sup> ['NERC Compliance Analysis Report, Reliability Standards FAC-008 and FAC-009, Facility Ratings']

associated with ratings (i.e. power flow models, EMS, and on-line power flow programs, etc.) are accurate and current.

**No Rating Methodology** – Violations found under this general heading begin with FAC-008-1, where the entities did not provide a rating methodology or did not consider all equipment in their methodology and had some equipment that lacked a rating. A good business practice is to institute a system to ensure that the entity checks that all equipment has a methodology and a calculated rating, and that the appropriate information has been shared with the appropriate entity or entities in the Region (i.e. Reliability Coordinators, Transmission Operators, Transmission Planners, and Planning Authorities).

**Documentation** – Entities found in violation under this general heading have been lacking in providing documentation that fully identifies the ratings for all BES equipment as addressed by this standard. Entities should develop documentation which addresses the ratings for all parameters of FAC-008 R1 and do internal compliance checks that ensure all equipment has been addressed.

Ratings documentation shown on single or multiple wiring drawings does not provide the clarity needed for operators or for the coordination of ratings, especially if sent to the appropriate entities as a “list of ratings.” Drawings used to validate compliance without document control information, with no effective dates, titles, approvals, etc., should not be submitted as sufficient evidence. If the ratings are throughout a series of drawings and various documents, the receiving entities would need these critical equipment ratings in some easily identifiable format. Perhaps a table listing each piece of equipment, diagram identification, or the method or calculation of the component rating may be an option to summarize this information. It may provide a benefit to identify for the receiving entities a ratings document that is precise and clear.