# **Standard Authorization Request Form**

Title of Proposed Standard	Reliability Coordination (Project 2006-06)
Request Date	December 18, 2006

SAR Requestor Information		<b>SAR Type</b> ( <i>Check a box for each one that applies.</i> )	
Name	Ellis Rankin		New Standard
Primary Cont	act Ellis Rankin		Revision to existing Standards – see list below
Telephone	214-743-6828		Withdrawal of existing Standard
Fax	972-263-6710		
E-mail	erankin@txued.com		Urgent Action

#### Purpose

The purpose of this set of standards is to ensure that the reliability coordinator has processes, procedures, plans, and can use their tools and authorities to support real-time operating reliability within its own reliability area and between reliability coordinator areas in support of reliability of the interconnected bulk power systems.

- COM-001 Telecommunications
- COM-002 Communications and Coordination
- IRO-001 Reliability Coordination Responsibilities and Authorities
- IRO-002 Reliability Coordination Facilities
- IRO-003 Reliability Coordination Wide Area View
- IRO-004 Reliability Coordination Operations Planning
- IRO-005 Reliability Coordination Current Day Operations
- IRO-007 Monitoring the Wide Area
- IRO-008 Reliability Coordinator Analyses and Assessments
- IRO-009 Reliability Coordinator Actions to Operate Within IROLs
- IRO-010 Reliability Coordinator Data Specification and Collection
- IRO-011 Providing Data to the Reliability Coordinator
- IRO-012 Procedures, Processes or Plans for Preventing and Mitigating IROLs
- IRO-013 Reliability Coordinator Directives Relative to IROLs
- IRO-014 Procedures to Support Coordination between Reliability Coordinators
- IRO-015 Notifications and Information Exchange Between Reliability Coordinators
- IRO-016 Coordination of Real-time Activities between Reliability Coordinators
- ORG-020 Reliability Coordinator Certification Certification
- ORG-021 Reliability Coordinator Certification Agreements
- ORG-022 Reliability Coordinator Certification Personnel
- ORG-023 Reliability Coordinator Certification Data Acquisition and Monitoring
- ORG-024 Reliability Coordinator Certification System Analysis
- ORG-025 Reliability Coordinator Certification Emergency Operations

ORG-026 — Reliability Coordinator Certification – Loss of Control Center Functionality

ORG-027 — Reliability Coordinator Certification – Restoration

PER-004 — Reliability Coordination – Staffing PRC-001 — System Protection Coordination

Several of the standards in this set are Version 0 standards. As the electric reliability organization begins enforcing compliance with reliability standards under Section 215 of the Federal Power Act in the United States and applicable statutes and regulations in Canada, the industry needs a set of clear, measurable, and enforceable reliability standards. The Version 0 standards, while a good foundation, were translated from historical operating and planning policies and guides that were appropriate in an era of voluntary compliance. The Version 0 standards and recent updates were put in place as a temporary starting point to stand up the electric reliability organization and begin enforcement of mandatory standards. However, it is important to update the standards in a timely manner, incorporating improvements to make the standards more suitable for enforcement and to capture prior recommendations that were deferred during the Version 0 translation.

#### Industry Need

- 1. Provide an adequate level of reliability for the North American bulk power systems the standards are complete and the requirements are set at an appropriate level to ensure reliability.
- 2. Ensure they are enforceable as mandatory reliability standards with financial penalties the applicability to bulk power system owners, operators, and users, and as appropriate particular classes of facilities, is clearly defined; the purpose, requirements, and measures are results-focused and unambiguous; the consequences of violating the requirements are clear.
- Consider comments received during the initial development of this set of standards and other comments received from ERO regulatory authorities and stakeholders (Attachment 1)
- 4. Bring the standards into conformance with the latest version of the Reliability Standards Development Procedure and the ERO Rules of Procedure. (Attachment 2)
- 5. Satisfy the standards procedure requirement for five-year review of the standards.

#### **Brief Description**

The drafting team will review all of the requirements in this set of standards and eliminate all of the requirements that are redundant. There are redundancies between requirements in the IRO-sequence of standards and also redundancies between requirements in the IRO-sequence of standards and the ORG-sequence of standards, and redundancies with PER-004, COM-001, COM-002, and PRC-001. Note that there will be a new standard to address communication protocols (Project 2007-02) and requirements for real-time communication protocols need to be transferred to that new standard.

The drafting team also needs to review requirements and ensure that the distinctions between the functional entity and the real-time system operator are clear and distinct. The requirements should be written for the functional entity.

The drafting team also needs to clarify the responsibilities and authorities in the requirements when comparing the "reliability coordinator" and the "transmission operator."

The drafting team needs to verify that requirements exempt the real time-operator from

liability when making a good faith effort at preserving reliability.

A challenge has been to require that entities have 'facilities' in place and available to the real-time system operators. These facilities are reviewed during certification, and unless there is a specific requirement to review these facilities, they may not be reviewed after the initial certification. To eliminate redundancy between the 'certification' standards and the standards that are aimed more at real-time operations, the certification standards could be phrased to clarify that entities are required to 'have and maintain' the specified facilities. This would enable the compliance monitor to check facilities on a periodic basis. While checking the facilities that are used on a daily basis may not be necessary, making periodic checks of the facilities that are infrequently would motivate entities to maintain these facilities, e.g., "Shall have a back up power supply for critical operations, and shall maintain and test at least once per year."

The results of the Operating Committee study on operator situational awareness tools should be used to verify that the requirements in the certification standards will meet reliability needs.

This project also needs to be coordinated with the project for developing Transmission Operator and Balancing Authority standards (2007-06).

IRO-001 has some 'fill-in-the-blank' components to eliminate.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

# **Reliability Functions**

The Stand		y to the Following Functions (Check box for each one that
	Reliability Coordinator	The entity that is the highest level of authority who is responsible for the reliable operation of the Bulk Electric System, has the Wide Area view of the Bulk Electric System, and has the operating tools, processes and procedures, including the authority to prevent or mitigate emergency operating situations in both next-day analysis and real-time operations. The Reliability Coordinator has the purview that is broad enough to enable the calculation of Interconnection Reliability Operating Limits, which may be based on the operating parameters of transmission systems beyond any Transmission Operator's vision.
	Balancing Authority	Integrates resource plans ahead of time, and maintains load- interchange-resource balance within its metered boundary and supports system frequency in real time.
	Interchange Authority	Authorizes valid and balanced Interchange Schedules.
	Planning Authority	Plans the Bulk Electric System.
$\boxtimes$	Resource Planner	Develops a long-term (>one year) plan for the resource adequacy of specific loads within a Planning Authority area.
$\boxtimes$	Transmission Planner	Develops a long-term (>one year) plan for the reliability of transmission systems within its portion of the Planning Authority area.
	Transmission Service Provider	Provides transmission services to qualified market participants under applicable transmission service agreements
	Transmission Owner	Owns transmission facilities.
$\boxtimes$	Transmission Operator	Operates and maintains the transmission facilities, and executes switching orders.
$\boxtimes$	Distribution Provider	Provides and operates the "wires" between the transmission system and the customer.
	Generator Owner	Owns and maintains generation unit(s).
	Generator Operator	Operates generation unit(s) and performs the functions of supplying energy and Interconnected Operations Services.
	Purchasing- Selling Entity	The function of purchasing or selling energy, capacity, and all necessary Interconnected Operations Services as required.

#### **Standards Authorization Request Form**

Market Operator	Integrates energy, capacity, balancing, and transmission resources to achieve an economic, reliability-constrained dispatch.
Load-Serving Entity	Secures energy and transmission (and related generation services) to serve the end user.

# Reliability and Market Interface Principles

-			
Ар	Applicable Reliability Principles (Check box for all that apply.)		
$\boxtimes$	<ol> <li>Interconnected bulk electric systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.</li> </ol>		
$\boxtimes$	2. The frequency and voltage of interconnected bulk electric systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.		
$\boxtimes$	<ol> <li>Information necessary for the planning and operation of interconnected bulk electric systems shall be made available to those entities responsible for planning and operating the systems reliably.</li> </ol>		
$\boxtimes$	4. Plans for emergency operation and system restoration of interconnected bulk electric systems shall be developed, coordinated, maintained and implemented.		
$\boxtimes$	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk electric systems.		
$\boxtimes$	<ol> <li>Personnel responsible for planning and operating interconnected bulk electric systems shall be trained, qualified, and have the responsibility and authority to implement actions.</li> </ol>		
$\boxtimes$	7. The security of the interconnected bulk electric systems shall be assessed, monitored and maintained on a wide area basis.		
	es the proposed Standard comply with all of the following Market Interface inciples? (Select 'yes' or 'no' from the drop-down box.)		
1.	The planning and operation of bulk electric systems shall recognize that reliability is an essential requirement of a robust North American economy. Yes		
2.	An Organization Standard shall not give any market participant an unfair competitive advantage.Yes		
3.	<ol> <li>An Organization Standard shall neither mandate nor prohibit any specific market structure. Yes</li> </ol>		
4.	An Organization Standard shall not preclude market solutions to achieving compliance with that Standard. Yes		
5.	. An Organization Standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. Yes		

# Related Standards – Listed under description

Standard No.	Explanation

# **Related SARs**

SAR ID	Explanation

# **Regional Differences**

Region	Explanation
ERCOT	
FRCC	
MRO	
NPCC	
SERC	
RFC	
SPP	
WECC	

# The drafting team will assist stakeholders in considering these comments in determining what changes to make to the standards:

#### COM-001-0 Telecommunications

FERC NOPR

- Include Measures and Levels of Non-Compliance;
- o Include generator operators and distribution provider as applicable entities; and
- Include requirements for communication facilities for use during emergency situations.

FERC Staff Report

- Lacks adequacy, redundancy and routing requirements
- Generation owners missing
- Expect new standard in November

V0 Industry Comments

- Redundant with Policy 5A, R1
- Many players missing
- Apply R1 to all but smallest entities

Violation Risk Factor Drafting Team Comments

• R6 – administrative requirement

#### COM-002-1 Communications and Coordination

FERC NOPR

- o Include Measures and Levels of Non-Compliance;
- Include a Requirement for the reliability coordinator to assess and approve actions that have impacts beyond the area views of transmission operators or balancing authorities;
- Include distribution providers as applicable entities; and
- Require tightened communications protocols, especially for communications during alerts and emergencies.

#### FERC Staff Report

- Missing requirement for approval of actions
- Lack of compliance and measures
- Expect November update

V0 Industry Comments

- Voice with generators not required
- R1 include reliability authority
- R2 include sabotage and security
- R4 clarify repeat back requirement with regard to emergency

## IRO-001-0 Reliability Coordination – Responsibilities and Authorities

FERC NOPR

- o Reflect the process set forth in the NERC Rules of Procedures; and
- Eliminate the regional reliability organization as an applicable entity.

FERC Staff Report

• RC not explicitly mentioned in Purpose

Regional Fill-in-the-Blank Team Comments

o Remove ", sub-region, or interregional coordinating group" from R1

 Consider removing "Standards of conduct are necessary to ensure the Reliability Coordinator does not act in a manner that favors one market participant over another." from the Purpose section of the standard.

V0 Industry Comments

- Inability to perform needs to be communicated
- What is meant by 'interest of other entity'?

Violation Risk Factor Drafting Team Comments

 R6 - Since the RC must be NERC certified, it stands to reason that anyone performing RC tasks should be certified. However, since the RC still retains the accountability for actions, and requirement 4 handles the agreements, this requirement is a medium risk.

#### IRO-002-0 Reliability Coordination – Facilities

FERC NOPR

- o Include Measures and Levels of Non-Compliance and
- Modify Requirement R7 to explicitly require a minimum set of tools for the reliability coordinator.

FERC Staff Report

- Lack of Measures & Compliance
- Expect new standard in November

V0 Industry Comments

- R5 define synchronized information system
- R7 define 'adequate' tools and 'wide-area'
- Words such as 'easily understood' and 'particular emphasis' need to be tightened

## IRO-005-1 Reliability Coordination – Current Day Operations

FERC NOPR

- Include Measures and Levels of Non-Compliance. We propose that the Measures and Levels of Non-Compliance specific to IROL violations should be commensurate with the magnitude, duration, frequency and causes of the violation.
- Further, as discussed above, we propose that the ERO conduct a survey on IROL practices and experiences.
- The Commission may propose further modifications to IRO-005-1 based on the survey results.

#### FERC Staff Report

- Concern with timing of critical outage during initial correction period
- Ambiguous with respect to IROL limits
- Lack of Measures & Compliance

Regional Fill-in-the-Blank Team Comments

• R14 has regional reference

#### V0 Industry Comments

• R10, 11 & 12 – RA not empowered to do this

**IRO-014-1** Procedures, Processes, or Plans to Support Coordination Between Reliability Coordinators

FERC NOPR

• No changes identified.

# **IRO-015-1** Notifications and Information Exchange Between Reliability Coordinators FERC NOPR

• No changes identified.

# **IRO-016-1** Coordination of Real-Time Activities Between Reliability Coordinators FERC NOPR

• No changes identified.

Violation Risk Factors Drafting Team Comments

o R1.2.1 & R2 – ambiguous

#### PER-004-0 Reliability Coordination – Staffing

FERC NOPR

- o Include formal training requirements for reliability coordinators similar to those addressed under the personnel training Reliability Standard PER-002-0;
- o Include requirements pertaining to personnel credentials for reliability coordinators similar to those in PER-003-0; and
- o Include Levels of Non-Compliance and Measures that address staffing requirements and the requirement for five days of emergency training.

#### FERC Staff Report

- Min. expectations and # of hours per year missing
- Blackout Report items not addressed
- Formal program not specified
- Measures & Compliance missing

V0 Industry Comments

- Calendar year timing increment
- Other training needs to be defined

#### PRC-001-0 System Protection Coordination

FERC NOPR

- o Include Measures and Levels of Non-Compliance;
- Include a requirement that relevant transmission operators and generator operators must be informed immediately upon the detection of failures in relays or protection system elements on the Bulk-Power System that would threaten reliable operation, so that these entities can carry out the appropriate corrective control actions consistent with those used in mitigating IROL violations; and
- Clarify that, after being informed of failures in relays or protection system elements on the Bulk-Power System, transmission operators or generator operators shall carry out corrective control actions, i.e., returning the system to a stable state that respects system requirements as soon as possible and no longer than 30 minutes.

#### FERC Staff Report

- Max. time period for corrective actions missing
- Expect new standard in November

V0 Industry Comments

- o Effects on reliability may not be known
- Consistent terminology as to neighbor vs. affected
- Not all criteria moved over from policies

The following standards have been proposed for retirement because they will be displaced by IRO-007 and IRO-008 but are included here in the event their retirement is not approved:

#### IRO-003-1 — Reliability Coordination – Wide-Area View FERC NOPR

- o Include Measures and Levels of Non-Compliance; and
- Include criteria to define the term "critical facilities" in a reliability coordinator's area and its adjacent systems.

FERC Staff Report

- Need to define critical facilities
- o Lack of Measures & Compliance
- Expect new standard in November

#### IRO-004-1 — Reliability Coordination – Operations Planning

FERC NOPR

• Require the next-day analysis to identify effective control actions that can be implemented within 30 minutes during contingency conditions.

FERC Staff Report

• No system assessment required

V0 Industry Comments

• Change 'particular attention to' to 'to monitor'

The following standards are under development and have not yet been approved, so there are no FERC comments or stakeholder comments on a 'finished' standard. These standards will be reviewed and may be modified as needed to meet the goals identified in the purpose statement of this SAR:

IRO-007 — Monitoring the Wide Area

IRO-008 — Reliability Coordinator Operational Analyses and Real-Time Assessments

IRO-009 — Reliability Coordinator Actions to Operate Within IROLs

IRO-010 — Reliability Coordinator Data Specification and Collection

IRO-012 — Reliability Coordinator Processes, Procedures, or Plans for Preventing and Mitigating Reliability Operating Limits

ORG-020 — Reliability Coordinator Certification - Certification

ORG-021 — Reliability Coordinator Certification - Agreements

ORG-022 — Reliability Coordinator Certification - Personnel

ORG-023 — Reliability Coordinator Certification - Data Acquisition and Monitoring

ORG-024 — Reliability Coordinator Certification – System Analysis

ORG-025 — Reliability Coordinator Certification – Emergency Operations

ORG-026 — Reliability Coordinator Certification – Loss of Control Center Functionality

ORG-027 — Reliability Coordinator Certification – Restoration

The drafting team will reference these guidelines in determining what changes to make to the standards to bring them into conformance with the *Reliability Standards Development Procedure Manual, Version 6* and the *ERO Rules of Procedure*:

## **Standard Review Guidelines**

## Applicability

Does this reliability standard clearly identify the functional classes of entities responsible for complying with the reliability standard, with any specific additions or exceptions noted? Where multiple functional classes are identified is there a clear line of responsibility for each requirement identifying the functional class and entity to be held accountable for compliance? Does the requirement allow overlapping responsibilities between Registered Entities possibly creating confusion for who is ultimately accountable for compliance?

Does this reliability standard identify the geographic applicability of the standard, such as the entire North American bulk power system, an interconnection, or within a regional entity area? If no geographic limitations are identified, the default is that the standard applies throughout North America.

Does this reliability standard identify any limitations on the applicability of the standard based on electric facility characteristics, such as generators with a nameplate rating of 20 MW or greater, or transmission facilities energized at 200 kV or greater or some other criteria? If no functional entity limitations are identified, the default is that the standard applies to all identified functional entities.

## Purpose

Does this reliability standard have a clear statement of purpose that describes how the standard contributes to the reliability of the bulk power system? Each purpose statement should include a value statement.

## **Performance Requirements**

Does this reliability standard state one or more performance requirements, which if achieved by the applicable entities, will provide for a reliable bulk power system, consistent with good utility practices and the public interest?

Does each requirement identify who shall do what under what conditions and to what outcome?

## Measurability

Is each performance requirement stated so as to be objectively measurable by a third party with knowledge or expertise in the area addressed by that requirement?

Does each performance requirement have one or more associated measures used to objectively evaluate compliance with the requirement?

If performance results can be practically measured quantitatively, are metrics provided within the requirement to indicate satisfactory performance?

## Technical Basis in Engineering and Operations

Is this reliability standard based upon sound engineering and operating judgment, analysis, or experience, as determined by expert practitioners in that particular field?

## Completeness

Is this reliability standard complete and self-contained? Does the standard depend on external information to determine the required level of performance?

### **Consequences for Noncompliance**

In combination with guidelines for penalties and sanctions, as well as other ERO and regional entity compliance documents, are the consequences of violating a standard clearly known to the responsible entities?

#### Clear Language

Is the reliability standard stated using clear and unambiguous language? Can responsible entities, using reasonable judgment and in keeping with good utility practices, arrive at a consistent interpretation of the required performance?

#### Practicality

Does this reliability standard establish requirements that can be practically implemented by the assigned responsible entities within the specified effective date and thereafter?

#### **Capability Requirements versus Performance Requirements**

In general, requirements for entities to have 'capabilities' (this would include facilities for communication, agreements with other entities, etc.) should be located in the standards for certification. The certification requirements should indicate that entities have a responsibility to 'maintain' their capabilities.

## **Consistent Terminology**

To the extent possible, does this reliability standard use a set of standard terms and definitions that are approved through the NERC reliability standards development process?

If the standard uses terms that are included in the NERC Glossary of Terms Used in Reliability Standards, then the term must be capitalized when it is used in the standard. New terms should not be added unless they have a 'unique' definition when used in a NERC reliability standard. Common terms that could be found in a college dictionary should not be defined and added to the NERC Glossary.

Are the verbs on the 'verb list' from the DT Guidelines? If not – do new verbs need to be added to the guidelines or could you use one of the verbs from the verb list?

## Violation Risk Factors (Risk Factor)

## **High Risk Requirement**

A requirement that, if violated, could directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures;

or a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

## Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system. However, violation of a medium risk requirement is unlikely to lead to bulk electric system instability, separation, or cascading failures;

or a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to bulk electric system instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

## Lower Risk Requirement

A requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system. A requirement that is administrative in nature;

or a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. A planning requirement that is administrative in nature.

## Mitigation Time Horizon

The drafting team should also indicate the time horizon available for mitigating a violation to the requirement using the following definitions:

- Long-term Planning a planning horizon of one year or longer.
- **Operations Planning** operating and resource plans from day-ahead up to and including seasonal.
- **Same-day Operations** routine actions required within the timeframe of a day, but not real-time.
- **Real-time Operations** actions required within one hour or less to preserve the reliability of the bulk electric system.
- **Operations Assessment** follow-up evaluations and reporting of real time operations.

## Violation Severity Levels

The drafting team should indicate a set of violation severity levels that can be applied for the requirements within a standard. ('Violation severity levels' replace existing 'levels of non-compliance.') The violation severity levels may be applied for each requirement or combined to cover multiple requirements, as long as it is clear which requirements are included.

## The violation severity levels should be based on the following definitions:

- Lower: mostly compliant with minor exceptions The responsible entity is mostly compliant with and meets the intent of the requirement but is deficient with respect to one or more minor details. Equivalent score: 95% to 99% compliant.
- Moderate: mostly compliant with significant exceptions The responsible entity is mostly compliant with and meets the intent of the requirement but is deficient with respect to one or more significant elements. Equivalent score: 85% to 94% compliant.
- **High: marginal performance or results** The responsible entity has only partially achieved the reliability objective of the requirement and is missing one or more significant elements. Equivalent score: 70% to 84% compliant.
- Severe: poor performance or results The responsible entity has failed to meet the reliability objective of the requirement. Equivalent score: less than 70% compliant.

# **Compliance Monitor**

Replace, 'Regional Reliability Organization' with 'Electric Reliability Organization'

# Fill-in-the-blank Requirements

Do not include any 'fill-in-the-blank' requirements. These are requirements that assign one entity responsibility for developing some performance measures without requiring that the performance measures be included in the body of a standard – then require another entity to comply with those requirements.

Every reliability objective can be met, at least at a threshold level, by a North American standard. If we need regions to develop regional standards, such as in under-frequency load shedding, we can always write a uniform North American standard for the applicable functional entities as a means of encouraging development of the regional standards.

# **Requirements for Regional Reliability Organization**

Do not write any requirements for the Regional Reliability Organization. Any requirements currently assigned to the RRO should be re-assigned to the applicable functional entity.

# Effective Dates

Must be 1<sup>st</sup> day of 1<sup>st</sup> quarter after entities are expected to be compliant – must include time to file with regulatory authorities and provide notice to responsible entities of the obligation to comply. If the standard is to be actively monitored, time for the Compliance Monitoring and Enforcement Program to develop reporting instructions and modify the Compliance Data Management System(s) both at NERC and Regional Entities must be provided in the implementation plan.

# **Associated Documents**

If there are standards that are referenced within a standard, list the full name and number of the standard under the section called, 'Associated Documents'.

# **Functional Model Version 3**

Review the requirements against the latest descriptions of the responsibilities and tasks assigned to functional entities as provided in pages 13 through 53 of the draft Functional Model Version 3.