

# **Basic Operating Functions and Responsibilities: A White Paper by the Control Area Criteria Task Force**

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North American Electric Reliability Council  
Operating Committee

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### ***Introduction – The Role of the Control Area***

NERC policies have historically assigned the “Control Area” the responsibility for transmission security, generation performance, and interchange schedule balancing. However, as the vertically integrated electric utilities have been unbundling their services, the functions of the Control Area are likewise being redefined as it becomes separated from its associated Transmission Provider(s) or Generation Providers. Control Areas do not have the same responsibilities today as they did before the deregulation of the electric utility industry began in the early 1990s.

The developing markets require wide-area transmission security assessment and dispatch solutions. These solutions are beyond the capability of many of today’s Control Areas to perform.

Reliability needs, now centered around the Control Area, must be reassessed. This reassessment is the basic charge from the NERC Operating Committee to the Control Area Criteria Task Force (CACTF).

### ***Market Functions and Reliability***

Markets have developed into new areas of operation not anticipated in current NERC Reliability Policies and Standards. The traditional requirements assigned generically to Control Areas included market-related functions, such as interchange scheduling. Those functions that can now be served by non-traditional market entities create actual, or at least perceived, commercial advantages for many Control Areas, especially in the areas of interchange scheduling and inadvertent accounting procedures. This was certainly not anticipated nor intended as NERC’s Operating Policies were developed. Nevertheless, these commercial advantages are in fact strong incentives for the newer market participants, such as independent generators, to become Control Areas.(Attachment 1, “Examples of Control Area Commercial Advantages”)

Therefore, reliability requirements must be reassessed to separate merchant functions from reliability functions and require independence when these merchant/reliability needs come together. Specifically, commercial advantages should be removed from the reliability functions.

### ***The New Reliability Model – Concepts***

The Control Area Criteria Task Force’s approach in addressing the role of Control Areas today and the relationship between merchant functions and reliability, is to build a new reliability model that:

1. Serves as a flexible base for various future Reliability organizations that may emerge,
2. Recognizes those functions that must be independent from the merchant function, and
3. Provides a framework for “unbundling” NERC’s Operating Policies, which are the operating rules for the Reliability organizations.

NERC Policies today, which are centered around the Control Area must be separated or “unbundled” into basic functional elements. These basic functional elements and the relationships to other elements form a Reliability Model that is described in this white paper. This Reliability Model does not favor a specific reliability or market organization or structure.

### ***The New Reliability Model – Development***

The first step in the CACTF’s development of a new reliability model was to identify specifically all functions required for maintaining electric system reliability and security. Following this first step (which resulted in almost 100 identified functions), the Task Force assigned related functions to a set of basic functional entities. Since there is no common “reliability organization structure,” the only common elements in the reliability spectrum are the entities that make up the Market Place. In their purest or root-level state, these are **Generators, Transmission Providers, Load Serving Entities, Purchasing-Selling Entities, Security Authorities and Balancing Authorities**. Two new entities were created to handle related reliability functions: the **Interchange Authority** and the **Compliance Monitor**. The **Transmission Provider** has been redefined into three components—**Transmission Service Provider,**

**Transmission Owner**, and **Transmission Operator**—to fit into the emerging roles of ISOs, RTOs, and Transcos.

The two primary areas where market needs and reliability limits meet are designed into the **Security Authority** and **Interchange Authority** roles. The Security Authority (similar to Security Coordinator) provides services well beyond today's Security Coordinators. It is the highest level of all the operating authorities, must be independent of *all* merchant functions, and must treat all scheduling and uses of the Transmission Grid in a manner that is not unduly discriminatory. The **Interchange Authority** will perform the scheduling functions historically handled by the “Control Area.” The Interchange Authority is envisioned to accommodate market needs for assembling “portfolios” of generation resources and customers in real time while supplying the required market-sensitive information for accurate security/reliability assessment. It should be able to provide “hubbing” and “parking” needs, as well as produce “linked” (actual source-to-sink) Schedules for security analysis. It is designed to submit valid, balanced Schedules to the Balancing Authority for implementation. The Interchange Authority will not need the traditional Control Area generation facilities to accomplish its tasks. Interchange Authorities may be associated with a merchant function, but will be closely monitored. Both of these Authorities will require certification by NERC and follow criteria developed by NERC.

The **Balancing Authority** will fulfill the control functions needed to ensure that generation-plus-interchange (from the Interchange Authority) is balanced with the demand, as well as to maintain Interconnection frequency on schedule. Balancing Authorities are intended to provide a reliability function without commercial advantages, and they will play the key role in ensuring the load-generation balance in the future. Since the Balancing Authority will be deploying Interconnected Operations Services in load-generation balancing, the Task Force believes this must also be independent of all merchant functions. The Balancing Authority could contract non-merchant sensitive control functions with others to utilize existing infrastructure. The Task Force is not suggesting an “optimum” number of Balancing Authorities.

The **Transmission Service Provider** reliability functions were separated from the **Transmission Owner** and **Transmission Operator** to more clearly define the “root level” reliability transmission functions. The Transmission Service Provider authorizes transmission use in an open, non-discriminatory manner, and must act independent of Transmission Owners and Transmission Operators.

The **Compliance Monitor** (who measures compliance with Reliability Policies and Standards) is also a new entity to interface on a Regional Council basis with the NERC Compliance Enforcement Program.

The Reliability Hierarchy (Attachment 2) summarizes the Reliability Entities, including NERC itself, and shows the hierarchy relationship among the entities. The Interchange Authority, Compliance Monitor, and Balancing Authority are shown as Operating Reliability Services because organizationally they may be at different levels or places depending on the specific organization structure of the area—ISO, RTG, RTO, Pool, etc. In all organization structures, the Security Authority is the highest operating level authority for grid reliability.

Definitions of each Reliability Entity and its reliability functions are shown in Attachment 3. The posited, future relationships among the reliability entities are shown in the Reliability Model (Attachment 4).

These documents provide a structure for the NERC Standing Committees and Subcommittees to develop and reformulate NERC's Operating Policies and Standards. Once policies are reformulated, they can apply to any Reliability Organization simply through a “roll-up” of the entities' responsibilities. For example, a Reliability Organization such as an RTO or ISO may serve as a Security Authority, Balancing Authority, Transmission Service Provider, and Interchange Authority. NERC Reliability Policies and Standards should become more precise and more easily understood and applied. Attachment 5 shows how the various stakeholders perform the Reliability, Merchant, and Independent Functions. Attachment 6 (“Reliability Model Functional Check”) shows how entities can serve different functions. Finally,

## **Basic Operating Functions and Responsibilities**

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Attachment 7 shows how the reliability entities can be “rolled up” into existing and planned reliability organizations. It also shows what kinds of organizations can perform which functions.

#### ***Definitions***

**Merchant Function.** The generation, selling, reselling, or purchasing of electric energy, capacity, or resources-related services.

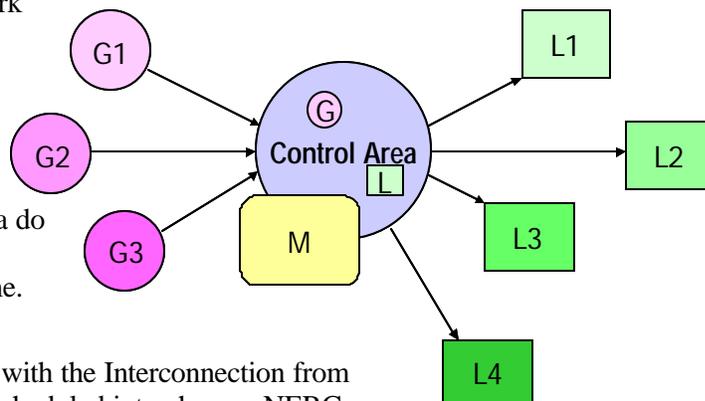
**Independent Function.** No corporate affiliation with the Merchant Function

## Examples of Control Area Commercial Advantage

### “Parking” and “Hubbing”

The affiliate merchant can use its control area to “park” generation resources and loads from other Control Areas. The merchant can then set up Interchange Transactions by “mixing and matching” the resources (sources) and the loads (sinks) through its Control Area.

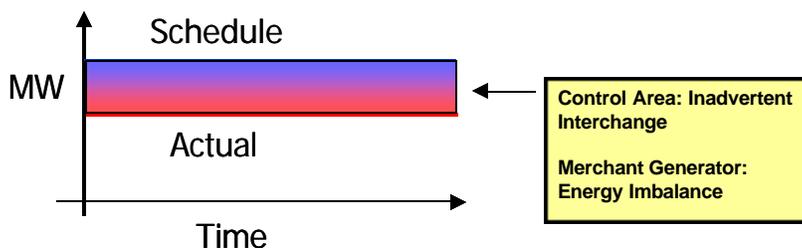
Merchants who are not affiliated with a Control Area do not have this “mix and match” flexibility and must establish the direct source-sink pairings ahead of time.



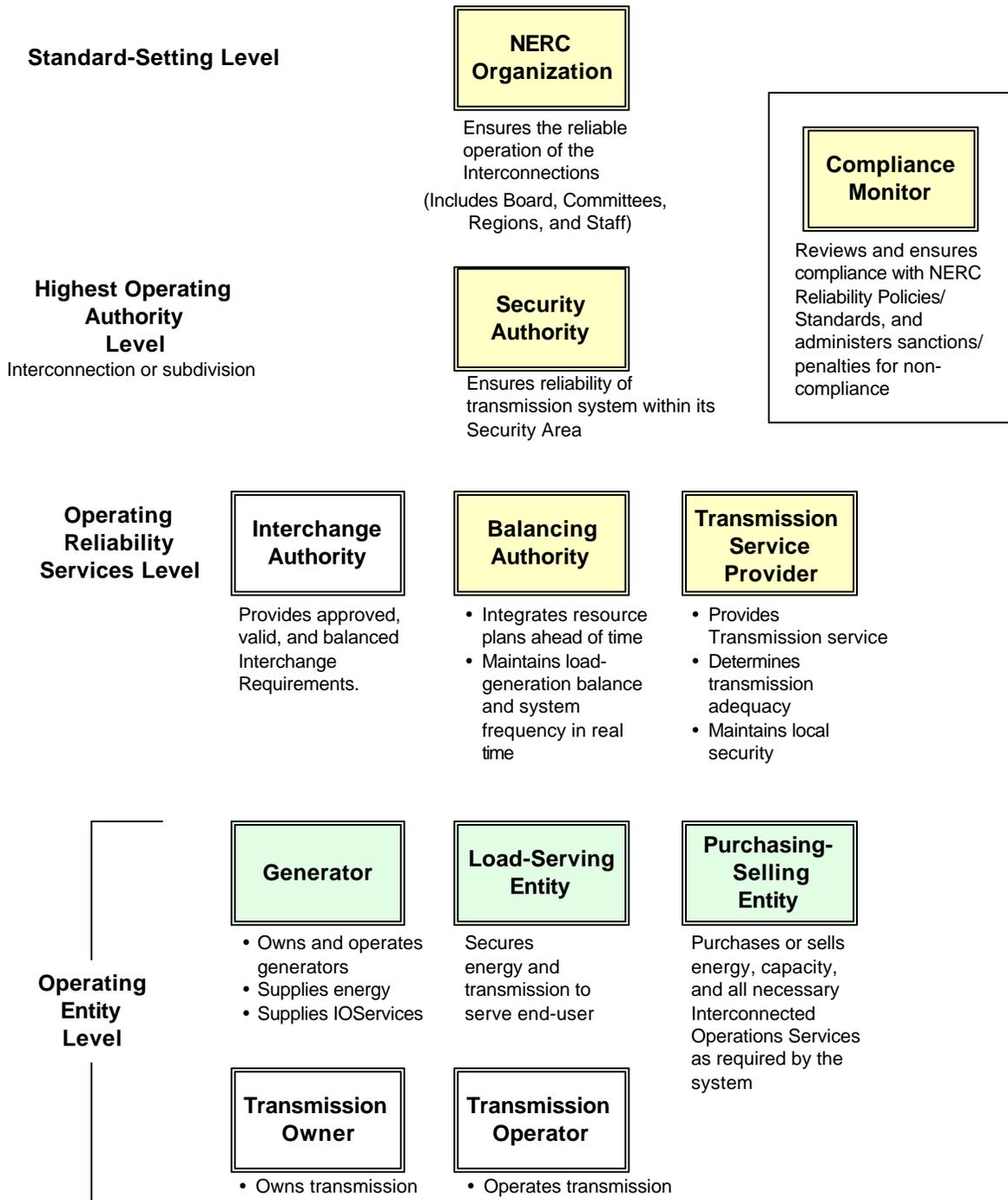
### Inadvertent Interchange Payback

A Control Area will build up an inadvertent balance with the Interconnection from mismatches between the Control Area’s actual and scheduled interchange. NERC Operating Policies require that the Control Area repay the Interconnection with energy (not dollars) at some future time. While NERC sets limits on real-time control performance, it does not set limits on how much inadvertent interchange a Control Area can accumulate, or specify when it must be repaid.

Merchant generators, on the other hand, must pay energy imbalance charges (dollars) when the difference between their generation output and schedule exceed a specified threshold.



## Reliability Hierarchy



|                      |   |
|----------------------|---|
| Independent Function | No corporate affiliation with the Merchant Function |
|----------------------|---|

|                          |   |
|--------------------------|---|
| <b>Merchant Function</b> | <b>The generation, selling, reselling, or purchasing of electric energy, capacity, or resources-related services.</b> |
|--------------------------|---|

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## **Functional Entities**

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### ***Security Authority***

Independent Function

#### **Definition**

An entity that performs the function of ensuring the reliability of the bulk power transmission system within its Security Authority Area.

#### **Criteria and Compliance**

- NERC-certified entity
- Must be independent from any Merchant Function
- Must have NERC-certified operators
- Subject to Code of Conduct
- Monitored for compliance by NERC Organization

#### **Responsibilities**

- Monitors all reliability-related data within its Security Authority Area
- Develops Operating Security Limits
- Performs Security analysis (actual and contingency) for its Security Authority Area
- Determines Interconnected Operations Services as required
- Provides oversight of transmission and generation operational plans and directs revisions as required
- Coordinates security processes and actions with and among other Security Authorities
- Identifies, communicates, and directs to appropriate entities options to relieve security threats and violations in its Security Authority Area
- Enforces Security standards
- Coordinates System Restoration

#### **Relationships – Functions**

- Receives facility data
  - Directly (from Generation Entity; Load-Serving Entity; Transmission Operator) or
  - Indirectly (From Balancing Authority; Transmission Service Provider; Purchasing Selling Entity)
- Provides evaluation of maintenance plans
  - Directly (to Generation Entity; Transmission Operator) or
  - Indirectly (to Balancing Authority; Purchasing Transmission Service Provider; Selling Entity)

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- Provides security analyses to Transmission Operators, Transmission Service Providers, and Balancing Authorities in its Area
- Issues security alerts to Generation Entities, Load-Serving Entities, Transmission Operators and Transmission Service Providers, Balancing Authorities, Interchange Authorities, and NERC
- Issues corrective actions to Transmission Operators, Transmission Service Providers, Balancing Authorities, and Interchange Authorities
- Coordinates with other Security Authorities
- Reports to Regional Compliance Monitor and to NERC

**Relationships – Boundaries**

- The Security Authority covers a defined, geographic area
- Security Area may cover one or more Regions
- May not overlap with other Security Authorities

***Balancing Authority***  
Independent Function

**Definition**

An entity that performs the functions of integrating resource plans ahead of time, and of maintaining load-interchange-generation balance and system frequency in real time.

**Criteria and Compliance**

- NERC-certified entity
- Must be independent of Merchant Function
- Must have control of any of the following combinations within its metered boundary:
  1. Load and Generation
  2. Load and Interchange
  3. Generation and Interchange
  4. Generation, Load, and Interchange
- Must have NERC-certified operators
- Subject to Code of Conduct
- Monitored for compliance by NERC or Region Compliance Monitor

**Responsibilities**

- Receives and verifies all generation/load requirements ahead of time
- Assesses ramping capability
- Formulates an operational plan for security assessment
- Confirms and implements interchange schedules
- Directs generators and loads to take action to ensure balance in real time
- Determines amount required and arranges for Interconnected Operations Services
- Implements Emergency Procedures
- Provides frequency control
- Monitors control performance and disturbance recovery
- Provides hourly balancing energy accounting and administers Inadvertent paybacks

**Relationships – Functions**

- Receives approved, valid, and balanced Interchange Schedules from the Interchange Authority
- Receives operational plans and commitments from Generators within the metered boundary of the Balancing Authority.
- Submits integrated operational plans to the Security Authority for security assessment and provide balancing information to the Security Authority for monitoring

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- Complies with reliability authority of Security Authority
- Informs Interchange Authority of Interchange Schedule interruptions initiated by the Balancing Authority or entities within its boundaries.
- Confirms ramping capability with Interchange Authority
- Requests Generators to provide Interconnected Operations Services
- Requests Generators to implement redispatch for congestion management as directed by the Security Authority.
- Verifies implementation of Emergency Procedures to Security Authority
- Provides operational information for Security Authority monitoring
- Coordinates and confirms interchange ramping with other Balancing Authorities
- Coordinates with Load Serving Entities' use of interruptible loads
- May contract for one or more functional services listed above to use existing infrastructure

**Relationships – Boundaries**

- May include one or more Transmission Owners
- May include one or more Transmission Service Providers
- May include one or more Generators
- May include one or more Load-Serving Entities
- May receive Interchange Schedules from one or more Interchange Authorities
- Must be within a single Security Area

## ***Transmission Service Provider***

Independent Function

### **Definition**

An entity that manages (under an agreement with owners) a common carrier transmission system and that performs the functions of providing transmission services to qualified market participants under applicable transmission service agreements. Also, determines transmission adequacy by monitoring the interconnected system and performing actions to preserve local network integrity.

### **Criteria and Compliance**

- NERC-certified entity
- Must provide access to the transmission system in accordance with its applicable transmission service agreements
- Subject to Code of Conduct (e.g., maintaining information confidential)
- Monitored for compliance by NERC or Region Compliance Monitor

### **Responsibilities**

- Accepts reservation requests via the OASIS and processes each request for service
- Approves/denies transmission reservation requests
- Designs, operates and maintains the OASIS and related e-commerce interfaces directly or via contract with entity not affiliated with the merchant function
- Approves/denies Interchange Transaction requests
- Develops and maintains business practices and operating agreements
- Determines Transmission Adequacy by calculating ATC at points of interconnection
- Determines transmission losses

### **Relationships – Functions**

- Approves/denies Transmission Reservation Requests from Purchase Selling and Load Serving Entities
- Coordinates ATC with Security Authority and other Transmission Service Providers
- Under reliability direction of Security Authority
- Implements emergency procedures directed by Security Authority
- Communicates ATC levels with Interchange Authority
- Receives Interchange Transaction information from the Interchange Authority
- Arranges for transmission loss compensation with Merchant/Pool Generation
- Arranges for reactive power with Merchant/Pool Generation for voltage support
- Coordinates DC Tie Operations with Security Authority and Interchange Authority
- Coordinates load shedding, with or as directed, by the Security Authority

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- Works with LSE T&D entities to assure network integrity
- Complies with reliability authority of Security Authority

**Relationships – Boundaries**

- Must be within a single Security Authority
- May include one or more Balancing Authorities
- May provide Transmission Service for any Interchange Authorities
- May provide Transmission Service for one or more Merchant Functions

***Transmission Owner***

An entity who owns a common carrier transmission system.

**Criteria and Compliance**

- Subject to code of conduct (will have market-sensitive information)

**Responsibilities**

- Establish ratings of its transmission facilities
- Establish revenue requirements

**Relationships – Functions**

- Provides the facilities to the Transmission Service Provider.

## ***Transmission Operator***

### **Definition**

The entity who operates and maintains the transmission facilities and equipment, and executes switching orders.

### **Criteria and Compliance**

- Must have NERC-certified operators
- Subject to code of conduct (will have market-sensitive information)

### **Responsibilities**

- Maintains appropriate voltage profiles
- Determines DC Tie Operations
- Provides local network integrity by defining operating limits, developing contingency plans, and monitoring operations
- Operates and maintains transmission facilities according to prudent utility practice
- Provide Telemetry of transmission system

### **Relationships – Functions**

- Operates transmission system facilities for the Transmission Service Provider under direction of the Security Authority
- Requests Transmission Loading Relief from Security Authority to mitigate Operating Security Limit violations.
- Implement security measures as directed by Security Authority
- Provides operations information to the Security Authority

## ***Interchange Authority***

### **Definition**

An entity who performs the function of providing approved, valid, and balanced Interchange Requirements.

### **Criteria and Compliance**

- NERC-certified entity
- May or may not be independent of Merchant Function
- Must have NERC-certified operators
- Subject to Code of Conduct
- Monitored for compliance by NERC

### **Responsibilities**

- Determines valid, balanced, Interchange Schedules (validation of sources and sinks, Interconnected Operations Services, etc. as provided on the Interchange Transaction tag).
- Collects and disseminates Interchange Transaction approvals and denials
- Authorizes implementation of Interchange Transactions
- Enters Interchange Transaction information into Reliability Assessment Systems (e.g., Interchange Distribution Calculator)
- Verifies Ramping Capability for requested Interchange Schedules
- Supports Reliability via notification services

### **Relationships – Functions**

- With Transmission Service Providers
  - Provides each Transmission Service Provider with the requested Interchange Transactions received from Purchasing Selling Entities using that Transmission Service Provider's reserved capability
  - Transmission Service Provider informs Interchange Authority of Interchange Schedule Request approval or denial
  - Informs Transmission Service Provider of Interchange Schedule Implementations and Curtailments from the Security Authority or Balancing Authority.
- With Balancing Authority
  - Provides approved, valid, and balanced Interchange Schedules to the Balancing Authority for implementation
  - When requested, confirms with Balancing Authority the ability to meet ramping requirements for submitted portfolio

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- Balancing Authority informs Interchange Authority of Interchange Schedule interruptions initiated by the Balancing Authority or entities within its boundaries.,
- Balancing Authority informs Interchange Authority of use of balancing via load-provided Interconnected Operations Services
- With Security Authority
  - Enters all Interchange Transaction information into reliability assessment systems (e.g., Interchange Distribution Calculator)
  - Submits all Interchange Schedule Requests to the Security Authority for approval
  - The Security Authority informs Interchange Authority of TLR cuts
  - Assist the Security Authority with Transmission Loading Relief (TLR)
- With Purchasing Selling Entities (PSE)
  - The Purchasing-Selling Entity requests approval of Interchange Transactions from the Interchange Authority
  - Receives confirmed Interchange Transaction requirements from Purchasing-Selling Entity
  - Receives Parked Transactions from Purchasing-Selling Entity
  - Informs Purchasing-Selling Entity of Schedule implementations and Interruptions
  - Informs Transmission Service Provider of Schedule implementations and interruptions
  - Informs Purchasing-Selling Entity of use of balancing via Load- Provided Interconnected Operations Services

**Relationships – Boundaries**

- Not included in a particular Security Area or Balancing Area
- May provide Interchange Schedules to any Balancing Authority
- Separate portfolios will be required for each Balancing Authority
- May provide Interchange Scheduling services to one or more Purchasing-Selling Entities.

## **Generator**

Merchant Function

### **Definition**

An entity that owns and operates generation unit(s) such as an Independent Power Producer, Exempt Wholesale Generator or Electric Utility (IOU, Cooperative, Municipality) or that runs a market for generation products (such as a power exchange or power pool) that performs the functions of supplying energy and Interconnected Operations Services

### **Criteria and Compliance**

- Monitored for compliance by NERC Regional Compliance Monitor

### **Responsibilities**

#### **Generation Operator and Power Exchanges<sup>1</sup>**

- Produces generation products (energy or Interconnected Operations Services or both per contracts or arrangements)
- Formulates daily generation plan

#### **Generation Operator only**

- Reports operating and availability status of units
- Develops annual maintenance plan for generating units

### **Relationships – Functions**

#### **Generation Owners only**

- Deals directly with either Load Serving or Purchase-Selling Entities via bilateral contracts for energy, capacity and/or Interconnected Operations Services products

#### **Power Exchanges Only**

- Deals directly with Load Serving Entities or Purchasing-Selling Entities who, through an agreement, allow the Power Exchange to obtain needed generation products

#### **Generation Owners and Power Exchanges**

- Negotiates agreement whereby Generation Owners supply bids for generation products to the Power Exchange and the Power Exchange can buy emergency power from generation owners

#### **Generation Operators and Power Exchanges**

- Provides Generation Commitment Plans to Balancing Authorities after notification by Purchase-Selling or Load Serving Entity of transactions approval
- Provides Balancing Authority with Balancing Authority-determined amount of Interconnected Operations Services
- Implements upon direction by Balancing Authorities redispatch and interchange schedules

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<sup>1</sup> A power exchange may be an independent entity and not a market participant.

**Relationships – Boundaries**

- Must be within metered boundary of a single Balancing Authority
- Must be within a single Security Authority area
- May use services of one or more Purchasing-Selling Entities

## ***Purchasing-Selling Entity***

### Merchant Function

#### **Definition**

An entity that performs the function of purchasing or selling energy, capacity and all necessary Interconnected Operations Services as required. Purchasing-Selling Entities may be Marketers, Customer Aggregators, and Merchant Affiliates.

#### **Criteria and Compliance**

- May have an affiliated Interchange Authority
- Not monitored for compliance, but may be denied services if non-compliant

#### **Responsibilities**

- Purchases and sells generation or capacity
- Purchases and sells Interconnected Operations Services .
- Reserves transmission service
- Requests approval of Interchange Transactions

#### **Relationships – Functions**

- Works with Load Serving Entities and other Purchase Selling Entities to define the type of Interchange Transactions and Interconnected Operations Services needed to supply the needs of the Load-Serving Entities
- Purchases the generation and Interconnected Operations Services needed to serve the Interchange Transactions from Generators, Power Exchanges or other Purchase Selling Entities
- Purchases the appropriate transmission service and Interconnected Operations Services for the Interchange Transactions from the Transmission Service Provider
- Submits to the Interchange Authority a request to implement an Interchange Transaction
- Notifies the Generator and Load Serving Entity if the Interchange Transaction request is approved or denied
- Notifies the Interchange Authority of Transaction Cancellations or Terminations

#### **Relationships – Boundaries**

- May use services of one or more Interchange Authorities
- May use services of one or more Transmission Service Providers
- May service one or more Load-Serving Entities

## ***Load-Serving Entity***

Merchant Function

### **Definition**

An entity that performs the function of securing energy and transmission ( and related generation services) to serve the end user.

### **Criteria and Compliance**

- Compliance monitored by Regional Compliance Monitor (e.g., if selling Interconnected Operations Services)

### **Responsibilities**

- Collects individual and develops overall load profiles/plans as required. (Daily, Weekly, Monthly etc...)
- Identifies and provides facilities for load curtailment
- Negotiates agreements for needed energy and Interconnected Operations Services

### **Relationships – Functions**

- Works with end-use customers and Customer Aggregators to develop and submit load profiles and plans as needed to the Balancing Authority, Generators, and Purchase Selling Entities
- Works with Purchase Selling Entities and Customer Aggregators to arrange for the delivery of energy to a specific metering point for loads via bilateral contracts
- Works with Generators and Power Exchanges on behalf of end-use customers to secure energy and Interconnected Operations Services needed via bilateral contracts.(In this role the Load Serving Entity is acting like the Purchasing-Selling Entity.)
- Works with the Balancing Authority and Transmission Operator to implement load shedding during emergency conditions and to provide load interruption capability as an ancillary service

### **Relationships – Boundaries**

- All end-use customers must be within the metered boundary of a Balancing Authority
- 
- May use services of one or more Purchasing-Selling Entities

## ***Compliance Monitor***

Independent Function

### **Definition**

An entity of the NERC Region Organization that performs the functions of reviewing and ensuring compliance with NERC Reliability Policies and Standards, and of administering sanctions or penalties for non-compliance to standards .

### **Criteria and Compliance**

- Criteria to be developed by NERC Organization
- Compliance monitoring coordinated by NERC Organization

### **Responsibilities**

- Audits and documents performance of all functional entities to NERC Policies, Requirements, and Standards
- 
- Provides compliance data

### **Relationships – Functions**

- Receives oversight direction from the NERC Organization for consistency
- Monitors Balancing Authorities, Generators, Transmission Operators, Transmission Service Providers, and Load Serving Entities within the NERC Region
- Provides compliance information to the NERC Organization and others as appropriate
- Assists the NERC Organization’s monitoring of Security Authorities and Interchange Authorities as appropriate

### **Relationships – Boundaries**

- Includes those functional entities within the Regional Council
- Compliance Monitor covers at least one or more Regions

***North American Electric Reliability Council***

Independent Function

**Definition**

The entity that performs the function of ensuring the reliable operation of the Interconnections in the United States, Canada, and Baja California Norte, Mexico. The NERC Organization includes the Board of Trustees, all committees and subgroups, Regional Councils, and staff.

**Criteria and Compliance**

- NERC Bylaws (future: NAERO Bylaws and regulatory authorities)

**Responsibilities**

- Develops Standards for the operation of the three electrical Interconnections that serve the United States, Canada, and Baja California Norte, Mexico.
  - Includes Standards for Transmission Operators, Transmission Service Providers, Generators, Load-Serving Entities, Purchasing-Selling Entities, plus Balancing, Interchange, and Security Authorities
- Develops Criteria and Certification Procedures for Balancing, Interchange, and Security Authorities, and Transmission Service Providers
- Provides data (via NERCnet) for monitoring and security assessment
  - Includes Interchange Transactions via IDC in Eastern Interconnection
- Monitors and reports on the adequacy of electricity supply.
- Coordinates the compliance programs of the ten Regional Councils.
- Provides for dispute resolution

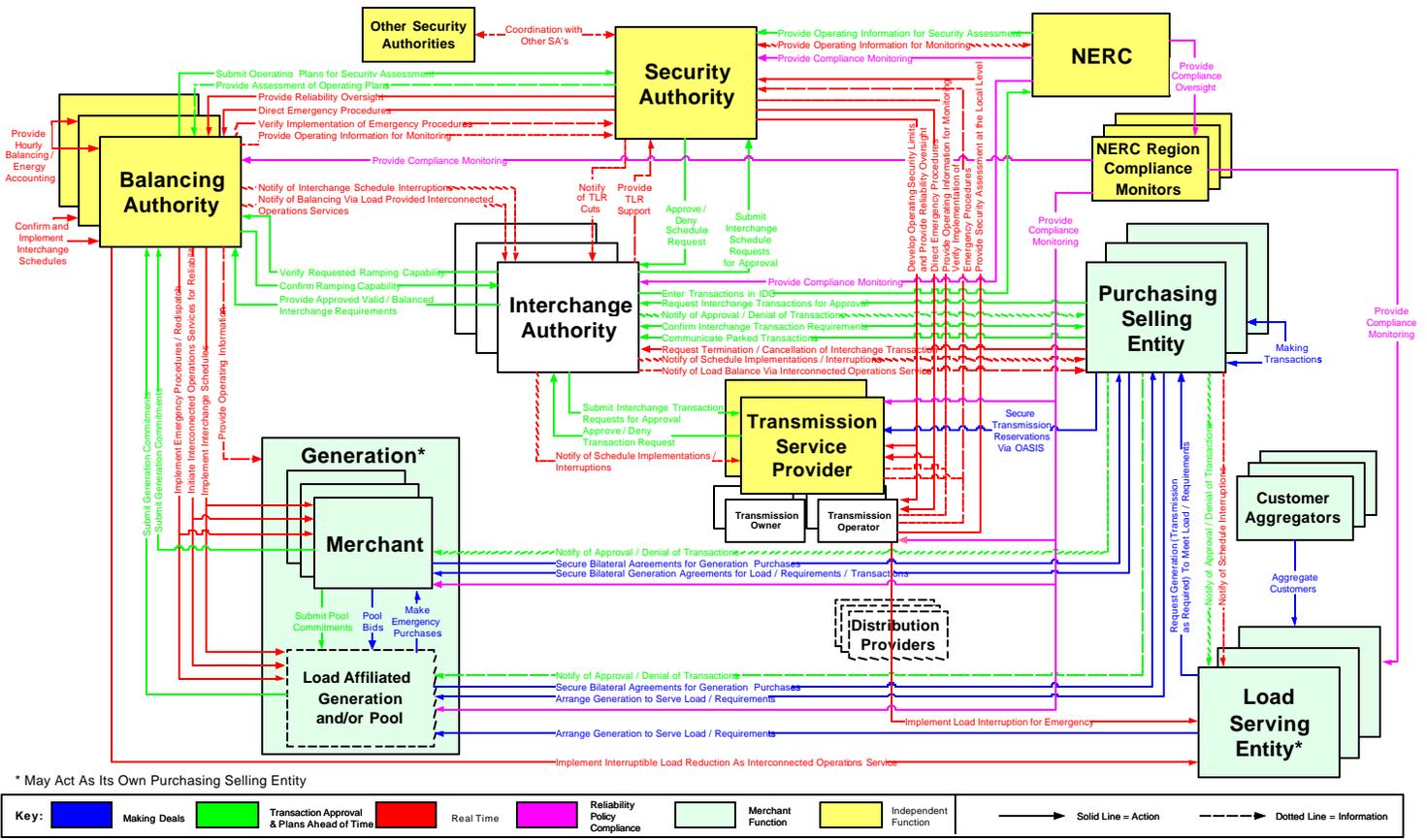
**Relationships – Functions**

- Receives operating data via the Balancing, Interchange, and Security Authorities
- Disseminates operating data via NERCnet and related communications applications (e.g. ISN)
- Monitors compliance of Interchange Authorities and Security Authorities

**Relationships – Boundaries**

- Includes all reliability entities

# Reliability Model



## Stakeholder Table

| Stakeholders                  | Reliability Function | Merchant Function | Independent Function |
|-------------------------------|----------------------|-------------------|----------------------|
| Security Authority            | ✓                    |                   | ✓                    |
| Balancing Authority           | ✓                    | (2)               | (1)                  |
| Interchange Authority         | ✓                    |                   |                      |
| Transmission Service Provider | ✓                    | (2)               | ✓                    |
| Transmission Owner(3)         | ✓                    |                   |                      |
| Transmission Operator(3)      | ✓                    |                   |                      |
| Generator                     | ✓                    | ✓                 |                      |
| Load Serving Entity           | ✓                    | ✓                 |                      |
| Purchasing Selling Entity     |                      | ✓                 |                      |
| Customer Aggregator           |                      | ✓                 |                      |
| Compliance Monitor            | ✓                    |                   | ✓                    |
| NERC Organization             | ✓                    |                   | ✓                    |

### Notes

(1) Reason for Independence: (Would affiliates be favored?)

- Objective evaluation of local Reliability criteria for Security Authority
- Mitigation of impacts of local operating procedures
- Deploying Interconnected Operations Services
- Ramping Interchange Schedules

Reason for either Affiliated or Independent:

- Interconnected Operations services will be via contractual arrangement
- Scheduling favoritism will be neutralized via the Interchange authority role

(2) May purchase Ancillary Services for system requirements, but is not a Merchant Function.

(3) Transmission Owner and Transmission Operator is a market participant, but not a Merchant Function.

## Reliability Model Functional Check

|          |      | Entity |     |    |    |     |     |     |      |
|----------|------|--------|-----|----|----|-----|-----|-----|------|
|          |      | BA     | TSP | SA | IA | GEN | PSE | LSE | COMP |
| Function | BA   |        |     |    |    | X   | X   | X   |      |
|          | TSP  |        |     |    |    | X   | X   | X   |      |
|          | SA   |        |     |    |    | X   | X   | X   |      |
|          | IA   |        |     |    |    |     |     |     |      |
|          | GEN  | X      | X   | X  |    |     |     |     | X    |
|          | PSE  | X      | X   | X  |    |     |     |     | X    |
|          | LSE  | X      | X   | X  |    |     |     |     | X    |
|          | COMP |        |     |    |    | X   | X   | X   |      |

|                      |  |  |
|----------------------|--|--|
| Independent Function | No corporate affiliation with the Merchant Function  |  |
| Merchant Function    | The generation, selling, reselling, or purchasing of electric energy, capacity, or resources-related services. |  |

**X** = Entity may not perform that **Function**

If an organization wants to be two or more entities, they must abide by the **X's** for all entities.

**“Roll-up” Table**

| Examples of Organizations Compatible with Reliability Model     |    |                |    |    |     |     |                |      |
|---|----|----------------|----|----|-----|-----|----------------|------|
| Independent Organizations                                       | BA | TSP            | SA | IA | GEN | PSE | LSE            | COMP |
| PJM   | ✓  | ✓              | ✓  | ✓  |     |     |                |      |
| IMO   | ✓  | ✓              | ✓  | ✓  |     |     |                |      |
| CISO  | ✓  | ✓              | ✓  | ✓  |     |     |                |      |
| ERCOT (ISO)   |    | ✓              | ✓  | ✓  |     |     |                | ✓    |
| MISO (RTO)  |    | ✓              | ✓  | ✓  |     |     |                |      |
| Examples of Organizations Not Compatible with Reliability Model |    |                |    |    |     |     |                |      |
| Organizations*  | BA | TSP            | SA | IA | GEN | PSE | LSE            | COMP |
| 1. Traditional Utility  | ✓  | ✓              | ✓  | ✓  | ✓   | ✓   | ✓              |      |
| 2. Utility without transmission                                 | ✓  |                |    | ✓  | ✓   | ✓   | ✓              |      |
| 3. Utility without generation                                   | ✓  | ✓              | ✓  | ✓  |     | ✓   | ✓              |      |
| 4. Non-Traditional Utility                                      | ✓  | ✓ <sup>a</sup> |    | ✓  | ✓   | ✓   | ✓ <sup>b</sup> |      |

\* Explanation of Organizations:

1. Utility – Traditional entity serves as BA, SA, IA and providing Merchant Functions (GEN, PSE).
2. Utility - Without transmission and serves as BA and SA and provides Merchant functions (GEN, PSE).
3. Utility – Without generation and serves as BA and SA and provides Merchant Function (PSE).
4. Non-traditional – serves as BA and IA and linked to provider of Merchant Function.
  - a. TSP outside of the respective BA
  - b. PSE outside of the respective BA

|                      |  |
|----------------------|--|
| Independent Function | No corporate affiliation with the Merchant Function  |
| Merchant Function    | The generation, selling, reselling, or purchasing of electric energy, capacity, or resources-related services. |

