Electricity Modernization Act of 2005

An Online Continuing Education Course for Engineers

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Electricity Modernization Act of 2005

Title 12 of the Energy Policy Act of 2005

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Introduction

On August 8, 2005 the Energy Policy Act of 2005 was signed into law. The purpose of the Act is to establish a comprehensive energy policy for the United States. The Act is a wide ranging piece of legislation consisting of over 1,700 pages that covers a broad spectrum of energy saving and energy production techniques. The insert on the right shows the major chapters of the Act.

Energy Policy Act of 2005

Title	Description
I	Energy Efficiency
II	Renewable Energy
III	Oil & Gas
IV	Coal
V	Indian Energy
VI	Nuclear Energy
VII	Vehicles & Fuel
VIII	Hydrogen Fuel
IX	Research & Development
X	Dept. of Energy Management
XI	Personnel & Training
XII	Electricity
XIII	Energy Policy Tax Incentive
XIV	Miscellaneous
XV	Ethanol & Motor Fuel
XVI	Climate Change
XVII	Innovative Technologies
XVIII	Studies

The Energy Policy Act of 2005 or EPAct'05 has eighteen chapters or titles. Included in the Act are such diverse items from tax incentives for nuclear power plant development to changes in daylight savings time schedules. The Act promotes renewable fuel sources including wind, solar, and tidal power. Alternative fuels such as biofuels are included the Act as well as other improvements in automobile fuels.

Traditional energy production sources such as oil, gas, coal, and nuclear are considered in the Act. For instance, the Act includes $200 million annually for clean coal initiatives.

There are tax breaks in the Act for almost all segments of the energy markets from tax breaks for oil companies to tax credits for consumers to purchase hybrid vehicles.

While there is plenty of criticism of the Energy Policy Act, some sections of the Act - Title 12 in particular - include significant improvements in the delivery of reliable electric power in the United States. Title 12 of the Act is subtitled the "Electricity Modernization Act of 2005" or EMAct'05.

The Electricity Modernization Act of 2005 amends the Federal Power Act to address reliability, transmission upgrades, transmission operations, alternative fuel sources, and other items related to the operation of electric power systems.

In this course we will look at the application of the Act to electric power systems. This is essentially a recapitulation of the Act with some of the 'legal' language removed to make the Act slightly more understandable.

A. Reliability Standards

Subtitle A of Title 12 of the EPAct'05 amends the Federal Power Act to include a new section (Sec. 215) concerning electric reliability of power systems. This section includes definitions and describes the formation of an Electric Reliability Organization. Let's look at a few definitions first.

Definitions

A *bulk-power system* is a system that includes facilities and control systems necessary for operating an interconnected electric energy transmission network and electric energy from generation facilities needed to maintain transmission system reliability. This does not include facilities used in the local distribution of electric energy.

Electric Reliability Organization or ERO is an organization certified by the Federal Energy Regulatory Commission (FERC) with the purpose of establishing and enforcing reliability standards for the bulk-power system.

Reliability standard means a requirement to provide for reliable operation of the bulk-power system. The term includes requirements for the operation of existing bulk-power system facilities, including cyber security protection, and the design of planned additions or modifications to such facilities to the extent necessary to provide for reliable operation of the bulk-power system, but the term does not include any requirement to enlarge such facilities or to construct new transmission capacity or generation capacity.

The term *reliable operation* means operating the elements of the bulk-power system within equipment and electric system thermal, voltage, and stability limits so that instability, uncontrolled separation, or cascading failures of such system will not occur as a result of a sudden disturbance, including a cyber security incident, or unanticipated failure of system elements.

A geographic area in which the operation of bulk-power system components is synchronized such that the failure of one or more of such components may adversely affect the ability of the operators of other components within the system to maintain reliable operation of the facilities within their control is known as *interconnection*.

Transmission organization means a Regional Transmission Organization, Independent System Operator, independent transmission provider, or other transmission organization approved by the FERC for the operation of transmission facilities. *Regional Transmission Organization* or 'RTO' means an entity of sufficient regional scope approved by FERC, to exercise operational or functional control of facilities used for the transmission of electric energy in interstate commerce and to ensure nondiscriminatory access to the facilities.

The term *regional entity* means an entity having enforcement authority.

A *cyber security incident* means a malicious act or suspicious event that disrupts the operation of those programmable electronic devices and communication networks including hardware, software and data that are essential to the reliable operation of the bulk power system.

Electric Reliability Organization

The EPAct'05 gives the FERC authorization to certify an entity as an Electric Reliability Organization (ERO) for purposes of approving reliabi
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Note: As of July 20, 2006 the FERC certified the North American Reliability Council (NERC) as the ERO.

The ERO must develop and file with FERC each reliability standard that it proposes. FERC may approve a proposed reliability standard or modification to a reliability standard if it determines that the standard is just, reasonable, not unduly discriminatory or