

**Balancing Authority/Transmission Operator
Reliability Readiness Evaluation Report**

**Louisiana Generating, LLC
New Roads, Louisiana**

June 18–21, 2007

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Introduction and Evaluation Process

The North American Electric Reliability Corporation (NERC) Reliability Readiness Evaluation and Improvement Program is one of the commitments of NERC and the industry to strengthen the reliability of the North American bulk power system. The program conducts independent evaluations of balancing authorities, transmission operators, reliability coordinators, and other key entities that support the reliable operation of the bulk power system to assess their preparedness to meet their assigned reliability responsibilities. The evaluations identify strengths and areas for improvement in an effort to promote excellence in operations among these organizations.

Since its inception in 2004, NERC and the industry have been working collaboratively to enhance the program. The evaluation process is based on fundamental aspects of reliability: culture, operations, maintenance, planning, and training. The document [*NERC Readiness Evaluation Procedure*](#) describes and defines the process used for reliability readiness evaluations. This document and other documents related to the program are available at <http://www.nerc.com/~rap/>.

The reliability readiness evaluation teams, each led by a NERC staff member and a regional co-leader, include industry volunteers with considerable expertise selected to provide representation from other interconnections, other regions, and neighboring operating entities. The teams also typically include representatives from the Federal Energy Regulatory Commission (FERC) staff.

The public version of the reliability readiness evaluation report contains the majority of the evaluation team's findings. Any discussion of findings pertaining to critical infrastructure will be contained in Appendix 1, a confidential appendix to the report that is sent privately to the evaluated entity and is not included in the public version of the report.

An evaluation team met on-site with Louisiana Generating, LLC (LAGN) representatives on June 18–21, 2007. This report reflects the views and recommendations of the evaluation team regarding the readiness of the LAGN to meet its responsibilities as a balancing authority.

Evaluation Team

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Organization Profile

Louisiana Generating, LLC (LAGN), owned by NRG Energy, Inc (NRG), resides in NRG's south central region, one of four NRG regions. LAGN is a balancing authority and contracts with NRG Power Marketing Inc. (PMI), another subsidiary of NRG, for some balancing authority responsibilities.

LAGN serves 11 Louisiana cooperatives, but has no retail customers, in a balancing authority footprint that covers much of the state. LAGN is responsible for the daily load forecast, and the cooperatives are responsible for the long-range forecast. The cooperatives have an aggregate load of about 2,100 MW. The balancing authority's all-time peak of 2,099 MW occurred December 8, 2006. LAGN has 2,395 MW of generating capacity consisting of 1,489 MW of coal, 220 MW dual-fuel (gas or oil), and 686 MW of gas.

While it is not a transmission operator, LAGN owns and switches transmission and distribution substations and owns one section of a radial 138 kV transmission line. As a transmission-dependent balancing authority served by Entergy Corp, Cleco Power LLC, and American Electric Power transmission companies, LAGN performs the switching in its substations under the direction of these NERC-registered transmission operators. It is connected to these transmission operators at 500, 230, 138, and 69 kV. LAGN is the interface between the transmission systems and the distribution systems operated by the cooperatives it serves. Southwestern Power Pool (SPP) functions as LAGN's reliability coordinator.

LAGN operates a control room in New Roads, Louisiana, for its transmission switching and monitoring and some balancing authority functions. The control room also provides a backup location for balancing authority functions performed at another site. PMI performs most of the balancing authority function at the Princeton, New Jersey, control center.

This report primarily covers LAGN's responsibilities as a NERC-registered balancing authority but will also review the transmission functions LAGN performs under the authority of other NERC-registered transmission operators. When necessary for clarity, this report specifies to the New Roads control center and the Princeton control center. When referring to PMI, the report is referring to operations at Princeton.

Executive Summary

The evaluation team concluded that the LAGN balancing authority has adequate facilities, processes, plans, procedures, tools, and trained personnel to perform the balancing authority functions necessary to maintain the reliable operation of the bulk power system. The evaluation team has identified a number of positive observations and offers recommendations of general improvement to further strengthen the LAGN operations.

LAGN and its parent company, NRG, have a culture of reliability improvement. This is exemplified in company project planning. LAGN is implementing a comprehensive backup control center plan that includes the New Roads and Princeton control centers and other areas of the company as well. A compliance manager and support personnel have been hired to ensure that LAGN is performing its operating responsibilities in a reliable manner. NRG is contemplating an energy management replacement so its various energy management systems will all operate on similar platforms, which will enhance backup operations and simplify system upkeep. As a smaller company, LAGN can foster more personal relationships that result in open and frank communications. This was observed by the evaluation team from the operators to the president of the region. The operators feel they can discuss issues with the president without feeling they are bypassing their managers.

Since LAGN is not a large company and is a transmission-dependent balancing authority, its operations may not be as complex as some. However, what LAGN does, it does well. It takes its balancing area responsibilities seriously and dedicates appropriate resources to those functions. To keep the system reliable, LAGN has built redundancy into its equipment. To keep its balancing area operating at a high level, the company has enhanced areas such as control performance monitoring and has developed thorough load forecasting processes.

The evaluation team has identified areas for improvement in training and documentation. While the LAGN documentation is complete, a more formal documentation program would help to ensure the operators are working with the most current procedures and are familiar with them. While the evaluation team found the training adequate, it believes there is room for improvement. Participating in drills, formalizing lessons-learned training, and providing more focus on the particular needs of its operations would improve the LAGN training.

Overall, the evaluation team identified 10 positive observations. In addition, the team offers five recommendations that, if implemented, will enhance LAGN's readiness to operate reliably and maintain the reliability of the bulk power system. The findings are listed in order of importance.

Positive Observations

The evaluation team noted the following positive observations during the reliability readiness evaluation process:

1. Personnel of the two control centers and various areas work well together, demonstrating a strong culture of team work (Sections 1.1, 2.2.2, 2.2.3).
2. LAGN has a manager of compliance and is adding additional support personnel to meet current and future reliability requirements (Section 1.1).
3. LAGN is developing comprehensive backup control center plans for both the Princeton and New Roads control centers that include diversity of server locations and communications paths (Section 1.1, 2.4, 8).
4. PMI has a proactive approach to maintain sufficient personnel in key operating positions (Section 5.1).
5. A meteorologist is on staff to enhance load-forecasting capability (Section 2.3).
6. A well-organized energy management system (EMS) display showing both underfrequency and manual load shed with real-time loading facilitates selective shedding of loads (Sections 2.3, 2.4).
7. NERC control performance standard (CPS) indicators CPS1 and CPS2 are prominently displayed to show the operator real-time performance in a unique manner that helps each operator improve his or her control performance (Section 2.3),
8. Using its data historian application, PMI has developed a tool to trend actual plant response with system response requests to verify actual load-following performance and uses the results to help maintain desired unit response rates (Section 2.3).
9. See discussion in Appendix 1.
10. See discussion in Appendix 1.

Recommendations

The evaluation team offers the following recommendations:

1. Develop documentation control procedures that include scheduling and tracking requirements for updates to verify updates have been made in a timely manner and a distribution method to verify operators have read and understood any changes to procedures (Sections 1.2.5, 2.2.3)*
2. Develop a standardized document template or format that includes the owner and revision date to give documents a uniform format and to verify procedures are current (Section 2.2.3)*.
3. Increase involvement from management in setting and evaluating training goals to ensure that operators receive training on specific LAGN facilities and procedures in addition to the current generalized training (Section 5.1).
4. Incorporate lessons learned into formal training to provide a more detailed review of system events and enhance operator comprehension and retention (Section 5.1)*.
5. Participate in SPP regional restoration drills to prepare operators for dealing with large-scale outages (Sections 2.4, 5.1).
6. Include regulation of pseudo ties in net interchange on mapboard to correct the area control error (ACE) equation (Section 2.1).

*Jointly identified by the company and lead evaluator as a key recommendation.

Discussion

The reliability readiness evaluation team examined the following key areas during the evaluation. The detailed discussion that follows provides the foundation for the recommendations and positive observations that the team identified. The report uses the generic term “system operator” to refer to all on-shift operating personnel responsible for executing the functions necessary to operate reliably and maintain the reliable operation of the bulk power system. This term will be used for the discussions unless additional specificity is required, such as the *balancing* system operator, or *transmission* system operator.

1. Culture

1.1 General

The corporate organization provides the necessary leadership and management for system operations to sustain high levels of safe, reliable operation.

LAGN has made many reliability improvements since the last readiness audit and completed all but one of the audit’s recommendations. Two significant commitments to reliability demonstrate the company’s commitment to reliability: the development of a comprehensive backup control center plan and an increase in compliance staff. LAGN is in the process of implementing the backup control center plan, which will close out the recommendations from the first readiness audit. The additional compliance staff will help LAGN’s compliance program improve its system reliability performance.

Reliability goals are included in individual operator goals, and the operator performance is measured against these goals. Goals include load-following objectives, switching performance, and adding value to the company.

The company has two programs to emphasize employee involvement in operations, including improving reliability. One entitled FORNRG is a program that recognizes and rewards individual contributions to company performance. A second program allows managers to provide instant recognition of exemplary employee performance. While the reward is not large, it does recognize and encourage good performance. Though the evaluation team did not evaluate the effectiveness of these programs, the team recognizes company efforts to encourage employee involvement in improving performance.

The NRG corporate safety program is effective at all levels and enhances safe and reliable operation. Safety goals are discussed at staff meetings, and the importance of safety is stressed at all levels of the organization.

Improvement projects are competing with other projects for corporate funding, and those with the highest payback are budgeted. Reliability projects are not required to show a payback, but the need must be demonstrated. One example is the business project to put three energy management systems on a common platform. The recommendation will include business continuity, emergency response, and reliability.

The evaluation team reviewed the LAGN participation in regional and NERC activities. For its size the company's staff participates in a reasonable number of committees and working groups. The culture of the company supports the reliability initiatives of these organizations.

1.2 Organizational Effectiveness

1.2.1 Foundation for System Reliability

The organization's values and behaviors—modeled by its leaders and practiced by its members—serve to make system reliability a top priority.

LAGN management has placed a high value on reliability. Management has developed the S.T.R.I.V.E. acronym (safety, teamwork, respect, integrity, value added, and exemplary leadership) to stress its corporate culture. LAGN strongly believes that stressing safety and integrity improves reliable operation. While many companies have similar slogans, LAGN management takes this idea seriously and includes the acronym in employee evaluations and company meetings. The S.T.R.I.V.E. acronym is in constant view, being used in wall posters, placemats, and at company meetings.

1.2.2 Leadership and Management

Managers, by leadership, commitment, and example, establish and reinforce high standards of performance and align the organization to achieve safe, reliable system operation.

LAGN management has an open door policy that encourages the operators to raise issues of concern. The operators agree that they have access to management to bring up reliability issues and that those issues will be reviewed and addressed as needed. Both operations supervisors visit their respective control room daily to discuss operations with the operators. The New Roads manager visits the control room daily, and the Princeton manager visits the control room daily. The Princeton director is off-site but visits at least monthly for several days. The senior vice president and president of the South Central Region occasionally visit the New Roads control room, and the operators interviewed stated that they can discuss reliability issues with them.

Most of LAGN's primary balancing authority functions are performed in the PMI control room in Princeton, New Jersey, and the transmission operations that interface with the cooperatives are handled in New Roads, Louisiana. The division of responsibility is clearly documented and reviewed, and each area clearly understands its role. The evaluation team found that a very clear and detailed service-level agreement between the two organizations was the foundation of this understanding.

LAGN has taken the initiative to develop policies and procedures to meet the requirements of the NERC cyber security standards. The LAGN staff followed the standard development and initiated plans independently from the parent corporation when its evaluation of its own needs determined that action was necessary. The evaluation team saw this as an example of the corporation allowing and supporting each area of the company to take necessary action to support reliability initiatives. The corporate plans have grown, and now the corporate and LAGN cyber security plans compliment and support each other.

1.2.3 Corporate Oversight and Monitoring

Line management is used to strengthen reliability and improve performance. System reliability is kept under constant scrutiny through techniques such as self-assessments, performance indicators, and periodic management meetings.

LAGN uses several feedback methods to improve system operator performance. The Princeton balancing authority operators are evaluated against their individual CPS results. The EMS provides CPS measurement feedback to the operators to assist them in maintaining acceptable performance and provide input for operator appraisals. The New Roads operators use informal lessons-learned feedback to improve performance. Other benchmark goals include customer outage statistics and individual generation unit performance.

Management uses a weekly staff meeting to coordinate activities among areas of the company and communicate organizational goals. If available, an operator attends these meetings; if not, the supervisor provides notes to the operators.

To enhance performance between the groups, management has established clear lines of authority for its operators at New Roads and Princeton. The operators effectively communicate and coordinate activities.

1.2.4 Human Resources

Personnel resource needs are anticipated and individuals are systematically recruited, developed, and assigned positions in the system operations organization.

LAGN has succession plans for its key employees. The plans include general provisions for operators and addresses circumstances that could affect the operator staffs. The succession plan looks 30 years into the future, but includes a more detailed 5-year staffing plan. PMI has included staffing to allow for training so it has personnel ready to replace departing operators. The evaluation team commends PMI for this practice.

1.2.5 Corporate Communications

System operations communications inform and engage both corporate and system operations employees so they can contribute to the strategic priorities of the organization.

Management encourages open and frank communication between its employees, and did the same for the evaluation team. The evaluation team believes this open communication has helped the LAGN and PMI operators work together as a team. While they are separated by hundreds of miles and support different goals, the operators respect each other's performance.

Policy and procedure changes are distributed to the operators by e-mail. The operators must sign off that they have read and understand the change and are encouraged to ask any questions they have. The evaluation team recommends that LAGN evaluate a more formal method of ensuring that operators understand the policy changes and include the process in the document control policy.

Operations supervisors hold two staff meetings with the operators each year to discuss operation issues and communicate company initiatives. The company uses these meetings to involve the operators in setting departmental goals as part of the organizational goal-setting process.

2. Fundamentals of Operations

2.1 General

Operations personnel monitor and control the system in a manner that ensures safe, reliable operation.

LAGN and PMI monitor their balancing area with an EMS that was installed in 2000. LAGN New Roads operators also use the EMS to monitor and control the transmission equipment. The system has adequate alarming functions. It monitors the frequency from two points with sufficient accuracy for automatic generation control to provide a primary and backup source. The system monitors 18 other points that would aid in identifying and operating a system that had separated into islands. The EMS monitors voltage but does not monitor reactive reserves. Reactive reserve monitoring is a function of the transmission operators to which LAGN is connected. LAGN does actively monitor contingency reserves and is a member of the SPP Reserve Sharing Group.

The New Roads control room includes a mapboard showing individual substations and displays of frequency and ACE with total generation and interchange. The evaluation team found that the interchange display did not include the pseudo tie flow. The evaluation team recommends that the mapboard display be modified to include regulation of pseudo ties in net interchange.

The EMS monitors each of the LAGN substations. The overall system view is the responsibility of the transmission operators at the companies to which LAGN is connected.

Both the New Roads and Princeton operators communicate with and follow directives from the reliability coordinator. The operator authority statement is signed and dated and is available in a binder in both control rooms. During the operator interview, the evaluation team verified that operators are aware of their responsibility, and they stated that management supports the independent operator authority.

NERC, regional, and reliability coordinator documents were available in control rooms at each control center and accessible by the operators. Documentation also included LAGN procedures and transmission operator documents, such as the restoration plans, capacity and energy emergency plans, and plans for evacuating to the backup control center. Documents were also available online.

Each control center has a documented shift-change procedure that includes a checklist with significant system conditions to pass on to the next operator. The manager of each control room gets a copy of the checklist.

PMI performs the marketing function and does not have access to transmission information. The New Roads operators have access to transmission information and are covered by the NERC

confidentiality agreements. LAGN has also signed a confidentiality agreement with SERC and maintains a list of SERC committee members that are authorized to receive confidential information.

2.2 Operational Focus

2.2.1 Operational Safety

System operation activities are conducted in a manner that maintains high levels of safety and reliability for all system conditions.

As a balancing authority, LAGN closely monitors ACE and controls the system to meet the NERC CPS. The company maintains operating reserves as dictated by the SPP Reserve Sharing Group and has added a compliance manager to ensure that it meets all the applicable NERC standards.

The New Roads operators direct field switching operations at the overall direction of the appropriate NERC-certified transmission operators from the transmission operating companies. The operators have a no-error switching goal.

2.2.2 Operational Decision-Making

Operational decisions are reached using a systematic and thorough approach that supports safe, reliable, and efficient system operations.

The balancing authority operator decision process is aided by a clear understanding of responsibilities and authority. This understanding starts with the delegation agreement between LAGN and PMI and is further promoted by management direction and open communication. The operators have been provided with the tools and the information to make sound decisions.

Engineering reviews operations as necessary and implements special procedures as necessary. LAGN engineering developed a switching procedure for the capacitor banks to minimize system impacts.

2.2.3 Operational Alignment

Organizational structure supports safe and reliable system operation.

The separation of functions between New Roads and Princeton may not be common in the industry, but it is effectively managed by the two organizations. The functions at PMI allow the operators there to focus on the normal operation of the balancing authority. They concentrate on ensuring that the LAGN balancing authority has adequate resources to meet load and contingency requirements, and that the resources are adequately responsive to meet LAGN's obligations to the interconnection.

The New Roads operators focus on outage coordination, switching, and coordinating activities with the transmission providers and cooperative customers. The New Roads operators also handle some emergency procedures, such as load reductions as directed by the PMI balancing authority operators or one of the transmission companies operators. Organizational agreements,

such as the delegation agreement, and open communications help coordinate operation between the two control centers.

The maintenance scheduling process requires that transmission outage requests be made two to three weeks ahead of the actual event. LAGN has an outage request procedure that includes a preliminary review before submitting to the transmission company. The transmission company has approval rights to outage requests. The transmission company coordinates the outage request with the reliability coordinator. LAGN includes relay maintenance requests in the scheduling process.

The operating procedures are contained in binders in each of the control rooms. While the binders were well organized and the operators were familiar with them, some procedures did not include revision dates or who authorized them. Some had a hand written signature and date that would not be present on the electronic copy. The supervisors were responsible for updating procedures, and LAGN did not track update requirements at the corporate level. The evaluation team recommends that LAGN develop a document control procedure with updating requirements, tracking procedures, and distribution requirements. The documents do not have a standard format. The team recommends that LAGN develop a standard template for its procedures that includes a place for the authorization date and name of the person responsible.

LAGN has reliability agreements with each power plant in its footprint and each cooperative it serves that clearly define the reliability responsibility of each participant. LAGN has generally assumed the responsibility, and has registered with NERC, as the generation owner and operator for the power plants and as the distribution provider, purchasing-selling entity, and load-serving entity for the cooperatives. The review and resulting contracts help ensure reliable operation.

2.3 Managing System Configuration

Power system configuration is carefully designed, analyzed, maintained, and controlled throughout the life of the infrastructure, ensuring that system and equipment margins are understood, considered in decision-making, and managed consistent with design and system requirements.

LAGN and PMI have the tools necessary for all balancing area functions. The EMS monitors ACE and displays the NERC CPS in a format that shows current performance that the operators use for maintaining acceptable CPS measurements. The evaluation team commends LAGN for developing this useful user-friendly CPS monitor that the operators use to improve CPS scores.

The EMS displays each generation unit along with its real-time capacity, load, and reserves available. All points on the EMS can be trended with the historical database and its associated analysis tools. PMI has developed an application that trends the unit control response against the set point sent by the EMS. When a generation unit fails to achieve its response capability, the generation plant operators are contacted to correct the deficiency. The PMI system operators have the data to verify their findings, which eliminates the potential arguments about the validity of the unit performance. The evaluation team commends PMI for developing and using this application to enhance its control performance.

PMI monitors LAGN's available reserves. LAGN is part of the SPP Reserve Sharing Group and responds to reserve requests made through the SPP reserve sharing terminal by the balancing system operator. The evaluation team witnessed the LAGN response to two SPP reserve sharing requests during the Princeton control center visit. LAGN would also use the SPP reserve sharing system to meet balancing requirements caused by the loss of generation.

LAGN has a complete set of load forecasting tools. Its two weather forecast services are reviewed by an on-site staff meteorologist and displayed on separate monitors at the operator console. The meteorologist develops and monitors the LAGN processes used to predict load based on the weather forecast. LAGN also tracks the actual load against the load forecast, and a second monitor tracks the load against the load curve for the past four days. These displays help highlight any significant change from the expected load profile. Short-term load forecasting is obviously a key part of balancing authority operation, and the evaluation team commends LAGN for its attention to this area and staffing of a full-time meteorologist.

PMI has an industry-standard interchange schedule monitoring and approval system. PMI approves interchange schedule tags in and out of the balancing authority area and responds to transmission line loading relief curtailments. All tag information is transmitted through this transaction system.

The underfrequency and manual load shedding are monitored and controlled from the New Roads control center. LAGN has developed a single display that shows all loads controlled by automatic underfrequency relays and loads on manual load shed breakers. The display shows the real-time loading. The manual load shedding can be implemented from this display. LAGN has direct control of most of the automatic underfrequency load shedding equipment, but one of the cooperatives has automatic underfrequency relays on its distribution equipment. LAGN has three automatic underfrequency points and exceeds the SERC requirements of shedding 10 percent of the load at each point. LAGN sheds 13.5 percent of its load at the first step, 18.8 percent at step two, and 17.4 percent at step three. While the automatic and manual load shedding overlap, the operator display provides the operators with the real-time load available for manual load shedding. The evaluation team commends LAGN for its load shedding program and the display developed to control it.

While LAGN has transmission responsibilities, it is not a NERC-registered transmission operator. It neither has nor needs a state estimator or real-time contingency analysis capability. These functions are performed by the transmission operators for the companies to which it is connected and the reliability coordinator. The transmission system is controlled by these transmission operators, and LAGN New Roads operators follow their directions. LAGN responds to line loading relief requests and other directives from the reliability coordinator. The reliability coordinator contacts either the New Roads or Princeton control centers as needed.

Neither the reliability coordinator nor transmission operators have identified any critical transmission or generator facilities on the LAGN system. LAGN does not have any special protection systems.

2.4 Emergency Preparedness

The organization is prepared to manage and mitigate the impact of system emergencies in order to preserve the reliability of the system and to protect the interests of the public.

LAGN has emergency load shedding plans and a good display to help the operators implement the plan if necessary. The operators were familiar with the plan and its implementation procedures. The plan covers the SERC load shedding requirements.

LAGN has a capacity and energy emergency plan. Each control center implements portions of the plan at the overall direction of the PMI operators. The operators at both control centers understand the components of the plan and their role in implementing it. The plan is of sufficient detail and covers all of the applicable suggested actions.

LAGN has a system restoration plan that is included in the Entergy system restoration plan. LAGN does not have any blackstart units. All plants are connected to the Entergy transmission system, and the LAGN operators follow the direction of the Entergy transmission operators. Entergy is responsible for the implementation of the plan. The operators were generally familiar with the plan, but they had not participated in regional reliability coordinator drills until this spring. One lesson learned in the drill was that the PMI operators should be included in the drill. LAGN plans to include them in the next drill. The evaluation team recommends that LAGN operators participate in regional drills or drills conducted by the transmission provider.

LAGN has no nuclear power plants in its balancing area and is not responsible for providing voltage support or emergency service to any nuclear plant.

3. Fundamentals of Maintenance

3.1 General

Maintenance is conducted by skilled personnel to achieve safe, reliable control center equipment and system performance.

The operators are satisfied with the EMS and other control center equipment.

LAGN analyzes all breaker trips to verify that the relaying equipment operates as designed. LAGN looks at a couple of dozen (or so) breaker operation trips each year. There have been no misoperations in the past five years. Relays are inspected on a two-year cycle with a maximum of three years between inspections. LAGN is moving towards microprocessor relays in all areas.

Supervisors are notified of all significant system events so they can provide any needed support.

3.2 Equipment Reliability

3.2.1 Equipment Performance

The organization achieves high levels of equipment reliability. Equipment problems that impact reliability are resolved in a thorough and timely manner.

The EMS has an availability of greater than 99.98 percent.

Substation equipment is owned by LAGN but is purchased and installed according to the transmission operator specification. All design information is provided to the transmission operator.

3.2.2 Work Management

Work activities, including corrective, elective, and preventive maintenance, surveillance testing, and modifications, are managed effectively to support safe, reliable operation during both outage and routine periods.

The operators at both sites have an “e-request” procedure for all computer, EMS, or communications problems or changes. Both sites have a single point of contact for control system or communications issues. The New Roads control center has a call-out procedure for substation problems.

4. Fundamentals of Operational Planning

Operational planning provides the technical information and support necessary for safe, reliable system operation.

The transmission operators to which LAGN is connected are responsible for system planning studies. LAGN does not perform any seasonal or daily planning studies. It completes a daily load forecast, but the cooperatives provide the data for the long-range load forecast. LAGN does coordinate and provide information to the transmission operators, the reliability coordinator, and the region.

LAGN installed two capacitor banks for voltage support at the request of the transmission operator. Because of the physical location and available space, it made sense for LAGN to construct this project.

The operators review the annual summer and winter seasonal planning studies that are performed by the transmission providers and regional committees.

5. Fundamentals of Training

5.1 General

Training in both specific job-related skills and broader technical fundamentals is used to provide highly skilled, knowledgeable personnel for safe, reliable operations, and to achieve performance improvement.

LAGN has a small staff and does not have a dedicated trainer for either control center. The training function is administered by the operator supervisors at each location. LAGN has contracted with a NERC-approved continuing education provider for the cornerstone of its program. The vendor provides courses meeting the NERC requirements and tracks operator training and course performance.

Initial training for new operators includes training to prepare for NERC certification, training courses provided by the vendor, and classroom training. The PMI operators obtain certification as balancing and interchange operators and the New Roads operators obtain certification as balancing, interchange, and transmission operators. Once the certification is obtained, the employee spends two to three months reviewing NRG training modules on standards and functional responsibilities of the operator position. Training during this phase includes on-the-job training with an experienced operator. When ready, the trainee will start performing tasks with oversight by the senior operator. Supervisors track training by reviewing checklists and quizzing the trainee on material covered. The trainee continues with vendor-provided material on emergency actions, system restoration, and system operator conferences. The Princeton operators usually take four to five months to complete the training; the New Road operators usually take three to four months.

PMI has staffed to allow for a person in its training rotation so that it is developing a fully trained operator if they lose an operator. Having extra personnel also assists in allowing time for the ongoing training of the other operators. The evaluation team commends PMI for this proactive approach to maintaining trained staff. New Roads operates on a five-operator rotation that makes finding time for continuing education difficult and does not allow for loss of experienced staff. New Roads does have contingency plans for the loss of personnel and is meeting the training requirements. Much of the training is completed on-shift. While the team did not find this ideal, LAGN New Roads operators are completing the necessary training. LAGN operators completed the 32 hours of required emergency training.

Although the evaluation team finds that the LAGN training is adequate, it believes that the training program could improve. LAGN uses the services of a training provider and this vendor provides industry training and keeps records on training the operators have received. The evaluation team recommends that LAGN provide more training on areas that specifically involve LAGN, its procedures, and its facilities. Management must review the LAGN training needs and make sure that training is provided to meet these specific needs. One area of immediate opportunity is the SPP reliability coordinator restoration drills. While LAGN participated in the last drill, it has not regularly participated in the SPP or Entergy drills. Management has stated that LAGN plans to participate in the future. The team recommends that LAGN participate in as many of these drills as possible. In the last drill, the Princeton operators did not participate, and

one of the lessons learned was that it would have been beneficial for them to participate. The evaluation team believes all participants of a real restoration should be involved in the drills.

The evaluation team also recommends that LAGN formalize its lessons-learned training. LAGN uses an informal communications to review lessons learned from operating events. The team finds that it is not clear who actually benefited from these informal sessions nor is it clear how detailed the review was. By developing a more formal process, LAGN would complete a closer review of the incident and prepare training material that would be better comprehended and retained by the operators. LAGN would then get the full benefits from the lessons learned.

LAGN does not participate in cross training its operators between the Princeton and New Roads facilities. The great distance and different living environments do not lend to cross training.

LAGN does not operate a transmission system; therefore, the company does not have or need a simulator to provide its operators emergency response training since it is not in their area of responsibility. Some of the LAGN operators received system restoration training on the SPP simulator and have found that experience to be beneficial.

5.2 Organizational Effectiveness

5.2.1 Human Performance

Personnel select and apply appropriate human error prevention techniques commensurate with the importance of assigned tasks to minimize the frequency and consequences of events.

The supervisors of the system operators use key on-the-job metrics to determine training needs. Training is provided as needed.

For safety reasons, LAGN operators utilize second-party verification in the writing and issuance of switching orders to ensure the orders are followed exactly. Prior to the issuance, the operator is expected to verify that the switching orders are complete and sufficient for the needed clearance.

APPENDIX 1: Critical Infrastructure

The following discussion will be presented under private letter to the evaluated entity only and will not be included within the public version of the report.

APPENDIX 2: Entity Participants

The following will be presented under private letter to the evaluated entity only and will not be included within the public version of the report.

APPENDIX 3: Documents Reviewed

The following will be presented under private letter to the evaluated entity only and will not be included within the public version of the report.