
United States
Department of Energy

Office of Electricity Delivery and Energy Reliability

Southwest Power Pool, Inc.

OE Docket No. EA-434



Order Authorizing Electricity Exports to Canada

Order No. EA-434

February 7, 2017

Southwest Power Pool, Inc.

Order No. EA-434 Authorizing Electricity Exports to Canada

I. BACKGROUND

The Department of Energy (the Department or DOE) regulates electricity exports from the United States to foreign countries in accordance with the Federal Power Act (FPA) § 202(e) (16 U.S.C. § 824a(e)) and regulations thereunder (10 C.F.R. §§ 205.300 *et seq.*). This authority was transferred to DOE under §§ 301(b) and 402(f) of the DOE Organization Act (42 U.S.C. §§ 7151(b), 7172(f)).

An entity that seeks to export electricity must obtain an order from DOE authorizing it to do so. Under FPA § 202(e), DOE “shall issue such order upon application unless, after opportunity for hearing, it finds that the proposed transmission would impair the sufficiency of electric supply within the United States or would impede or tend to impede the coordination in the public interest of facilities subject to the jurisdiction of [DOE].” 16 U.S.C. § 824a(e). DOE has discretion to condition the order as necessary or appropriate; the Department “may by its order grant such application in whole or in part, with such modifications and upon such terms and conditions as the [DOE] may find necessary or appropriate, and may from time to time, after opportunity for hearing and for good cause shown, make such supplemental orders in the premises as it may find necessary or appropriate.” *Id.*

A. Application for Export Authorization

Southwest Power Pool Inc. (SPP or Applicant) is seeking authorization to export electric energy into Canada utilizing the existing transmission facilities of Basin Electric Power Cooperative (Basin Electric) for a term of five years and an interim order authorizing exports of sales of “emergency energy”¹ to begin immediately while SPP’s application is under review. See Application of Southwest Power Pool, Inc. for Authorization to Export Electric Energy to Canada (November 14, 2016) (Application or App.), at 1.

SPP is an Arkansas non-profit corporation with its principal place of business in Little Rock, Arkansas. App. at 3. SPP administers open access transmission service over approximately 60,000 miles of transmission lines covering portions of 14 states across the facilities of SPP’s Transmission Owners, and administers the Integrated Marketplace, a centralized day ahead and real-time energy and operating reserve market with locational marginal pricing and market-based congestion management.

¹ A Joint Operating Agreement between SPP and SaskPower defines “Emergency Energy” as electric energy provided for a limited duration, intended only for use during an Energy Emergency Alert.” See Application at 10.

SPP is a Regional Transmission Organization (RTO) approved by the Federal Energy Regulatory Commission (FERC). SPP does not own or operate any transmission or distribution facilities and does not have a franchised service area. App. at 4.

Because SPP does not own transmission facilities, the electric energy that it proposes to export will be wheeled over transmission facilities owned and operated by Basin Electric. Under this model, SPP will comply with terms and conditions for cross-border facilities as well as any other export limitations DOE deems appropriate. App. at 4. SPP will comply with applicable reliability standards and guidelines of the North American Electric Reliability Corporation (NERC). App. at 4.

As discussed below, SPP contends that its proposed exports will neither jeopardize the sufficiency of electric supply nor the reliability of the transmission grid; thus, SPP asserts that it meets the criteria of FPA § 202(e). App. at 11,12.

B. Procedural History

On November 14, 2016, SPP filed an application with DOE requesting an export authorization on an emergency basis for a term of five years. On January 4, 2017, DOE published notice of the application in the *Federal Register*. 82 Fed. Reg. 831 (January 4, 2017). DOE asked for any interested parties to submit comments on the application by February 3, 2017. DOE received one comment on January 5, 2017. The comment is discussed in Section III.

II. DISCUSSION AND ANALYSIS

DOE is statutorily obligated under FPA § 202(e) to grant requests for export authorization unless the Department finds that the proposed export would negatively impact either: (i) the sufficiency of electric supply, or (ii) the coordination of the electric grid. Regarding the first exception criterion, DOE shall approve an electricity export application “unless, after opportunity for hearing, it finds that the proposed transmission would impair the sufficiency of electric supply within the United States ...” 16 U.S.C. § 824a(e). DOE has interpreted this criterion to mean that sufficient generating capacity and electric energy must exist, such that the export could be made without compromising the energy needs of the exporting region, including serving all load obligations in the region while maintaining appropriate reserve levels. *E.g.*, *BP Energy Co.*, OE Order No. EA-314, 1-2 (Feb. 22, 2007), *renewed*, OE Order No. EA-314-A, 2 (May 3, 2012).

Under the second exception criterion, DOE shall approve an electricity export application “unless, after opportunity for hearing, it finds that the proposed transmission would ... impede or tend to impede the coordination in the public interest of facilities subject to the jurisdiction of [DOE].” 16 U.S.C. § 824a(e). DOE has interpreted this criterion primarily as an issue of the operational reliability of the domestic electric

transmission system. Accordingly, the export must not compromise transmission system security and reliability. *E.g.*, *BP Energy Co.*, OE Order No. EA-314, 2 (Feb. 22, 2007), *renewed*, OE Order No. EA-314-A, 2 (May 3, 2012).

A. SPP's Requested Authorization Will Not Impair the Sufficiency of Electric Supply in the U.S.

Sufficiency of supply, the first exception criterion, addresses whether regional electricity needs are met in the current market. DOE has analyzed this issue from both an economic and a reliability perspective. The economic perspective concerns the supply available to wholesale market participants. The reliability perspective focuses on preventing problems that could result from inadequate supplies. Taken together, DOE examines whether existing electric supply is available via market mechanisms, and whether potential reliability issues linked to supply problems are mitigated by reliability enforcement mechanisms.

From an economic perspective, DOE finds that the wholesale energy markets are sufficiently robust to make supplies available to exporters and other market participants serving United States regions along the Canadian and Mexican borders. Following enactment of the Energy Policy Act of 1992, Pub. L. No. 102-486, which encouraged FERC to foster competition in the wholesale energy markets through open access to transmission facilities, energy markets developed across the United States to provide opportunities for a more efficient availability of supply. Subsequently, the Energy Policy Act of 2005, Pub. L. No. 109-58, reaffirmed the Government's commitment to competition in wholesale energy markets as national policy. FERC has continued to encourage the expansion of wholesale energy markets through its orders to remove barriers² and to ensure these markets are functioning properly.³ As a result, market participants have access to traditional bilateral contracts, as well as organized electricity markets run by regional transmission organizations or independent system operators (RTOs/ISOs). FERC oversees these interstate wholesale electricity markets across most of the lower 48 states. Absent an indication in the record that the geographic markets relevant to this export authorization analysis are flawed and result in uneconomic exports that jeopardize regional supply, DOE finds that the proposed transmission for export does not impair the sufficiency of electric supply within the United States.

²*E.g.*, *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, 72 Fed. Reg. 12,266 (Mar. 15, 2007), FERC Stats. & Regs. ¶ 31,241, *order on reh'g*, Order No. 890-A, FERC Stats. & Regs. ¶ 31,261 (2007), *order on reh'g*, Order No. 890-B, 123 FERC ¶ 61,299 (2008), *order on reh'g*, Order No. 890-C, 126 FERC ¶ 61,228 (2009).

³*E.g.*, *Wholesale Competition in Regions with Organized Electric Markets*, Order No. 719, FERC Stats. & Regs. ¶ 31,281 (2008), *as amended*, 126 FERC ¶ 61,261, *order on reh'g*, Order No. 719-A, FERC Stats. & Regs. ¶ 31,292, *reh'g denied*, Order No. 719-B, 129 FERC ¶ 61,252 (2009).

From a reliability perspective,⁴ DOE focuses on the prevention of cascading outages and other problems that could result from inadequate resources.⁵ Reliability issues are addressed by the authority granted to FERC through the Energy Policy Act of 2005. That Act added § 215 to the Federal Power Act, which directed FERC to certify an electric reliability organization and develop procedures for establishing, approving, and enforcing mandatory electric reliability standards. 16 U.S.C. § 824o. FERC certified NERC in 2006 to establish and enforce reliability standards for the bulk power system in the United States. The reliability standards address issues such as resource and demand balancing, emergency preparedness and operations, interchange scheduling and coordination, and interconnection reliability operations and coordination.

Through enforcement by FERC, NERC, and eight Regional Entities overseen by NERC,⁶ all bulk power system owners, operators, and users are held responsible for complying with reliability standards. The reliability standards are structured so that many entities have overlapping responsibility for the electric grid, thereby resulting in several layers of reliability monitoring. Entities such as reliability coordinators and balancing authorities coordinate power generation and transmission among multiple utilities to serve demand within an integrated regional wholesale market. One of the principal functions of these entities is to schedule adequate generating and reserve capacity. This allows them to serve demand at the regional level and to ensure that there are sufficient power supplies to maintain system reliability. Reliability oversight is designed to benefit the overall region; the reliability standards explicitly place the interests of the interconnection before the interests of any particular entity such as an exporter. *See* Reliability Standard IRO-001-1.1 R9. DOE finds that FERC's comprehensive enforcement mechanism ensures that bulk system owners, operators, and users have a strong incentive both to maintain system resources and to prevent reliability problems that could result from movement of electric supplies through export. As a result of this reliability oversight, DOE finds that the sufficiency of supply is not impaired by SPP's proposed export authorization.

⁴A related reliability analysis follows in the next section of this order.

⁵This focus should not be confused with resource adequacy planning and capacity requirements that have traditionally been the domain of state regulatory commissions and more recently, RTOs and ISOs.

⁶The eight entities are the Florida Reliability Coordinating Council, Midwest Reliability Organization, Northeast Power Coordinating Council, Reliability *First* Corporation, SERC Reliability Corporation, Southwest Power Pool Regional Entity, Texas Reliability Entity, and the Western Electricity Coordinating Council.

B. SPP's Requested Authorization Will Not Adversely Affect Either the Reliability or the Security of the U.S. Electric Transmission System

Reliability, the second exception criterion under FPA § 202(e), addresses operational reliability and security of the domestic electric transmission system. In evaluating the operational reliability impacts of export proposals, DOE has used a variety of methodologies and information, including established industry guidelines, operating procedures, and technical studies where available and appropriate. When determining these impacts, it is convenient to separate the export transaction into two parts: (i) moving the export from the source to a border system that owns the international transmission connection, and (ii) moving the export through that border system and across the border.

Moving Electricity to a Border System. Moving electricity for export to a border system necessarily involves the use of the bulk power system. As noted in the preceding section, bulk power system reliability concerns are addressed under the FPA by FERC and NERC and involve the enforcement of mandatory reliability standards. These standards ensure that all owners, operators, and users of the bulk power system have an obligation to maintain system security and reliability. The standards are structured so that there are always entities with broader responsibilities than the applicant, such as reliability coordinators and balancing authorities, to keep a constant watch over the domestic transmission system.

To deliver the export from the source to a border system, the applicant must make the necessary commercial arrangements and obtain sufficient transmission capacity to wheel the exported energy to the border system. The applicant would be expected to follow FERC orders regarding open transmission access and to schedule delivery of the export with the appropriate RTO, ISO, and/or balancing authority (formerly the control area operator).

It is the responsibility of the RTO, ISO, and/or balancing authority to schedule the delivery of the export consistent with established and mandatory operational reliability criteria. During each step of the process of obtaining transmission service, the owners and/or operators of the transmission facilities will evaluate the impact on the system and schedule the movement of the export *only* if it would not violate established operating reliability standards. As a failsafe, the reliability coordinator in each region has the authority and responsibility to curtail, cancel, or deny scheduled flows to avoid shortages or to restore necessary energy and capacity reserves. *See* Reliability Standard EOP-002-3.1 R1 (“Each Balancing Authority and Reliability Coordinator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its respective area and shall exercise specific authority to alleviate capacity and energy emergencies.”).

Specifically, the reliability coordinator has the authority to suspend exports if the electric energy would be needed to support the regional power grid. *See* Reliability Standard IRO-001-1.1 R3 (“The Reliability Coordinator shall have clear decision-

making authority to act and to direct actions...to preserve the integrity and reliability of the Bulk Electric System. These actions shall be taken without delay, but no longer than 30 minutes.”) & R8 (“Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall comply with Reliability Coordinator directives unless such actions would violate safety, equipment, or regulatory or statutory requirements.”).

DOE has determined that the existing industry procedures for obtaining transmission capacity on the domestic transmission system (described above) provide adequate assurance that any particular export will not cause an operational reliability problem. Therefore, SPP’s export authorization has been conditioned to ensure that the export will not cause operating parameters on regional transmission systems to fall outside of established industry reliability criteria, or cause or exacerbate a transmission operating problem on the U.S. electric power supply system (*see* Order below, Section VII, paragraphs C, D, and I).

DOE makes this finding with the understanding that mandatory reliability standards and market restructuring have obviated the need for standard transmission studies. Before the electric power industry was restructured, the only entities able to export were those electric utilities that were contiguous with the U.S. international border that owned international transmission facilities. The exported energy generally originated from within the exporter’s system, and standard transmission studies could determine the impact of the export on regional electric systems. In recent years, however, deregulation of wholesale energy markets and the introduction of open-access transmission have expanded the scope of entities capable of exporting electric energy. Today, at the time it submits its application to DOE, the typical exporter cannot identify the source of the exported energy or the electric systems that might be called upon to provide transmission service to the border. Consequently, traditional transmission studies cannot be used to determine the impact of such exports on the operational reliability of the regional electric transmission system.

Moving Electricity Through a Border System. The second part of DOE’s reliability inquiry, addressing the transmission of the export through a border system and across the border, is a question of whether the border system is reliable and secure. To a large extent, this question is addressed by the jurisdiction of NERC. NERC and Regional Entities—including the Midwest Reliability Organization (MRO), the Northeast Power Coordinating Council (NPCC), and the Western Electricity Coordinating Council (WECC)—oversee the United States-Canadian border system and a significant part of the United States-Mexican border system. Those border systems are generally subject to the same reliability standards as domestic systems. *See, e.g.,* <http://www.ieso.ca/Pages/Participate/Reliability-Requirements/Reliability-Standards-Framework.aspx>.

DOE also relies on the technical reliability studies submitted in conjunction with an application for a DOE-issued Presidential permit⁷ to construct a new international transmission line. As DOE has previously reviewed technical reliability studies submitted with Presidential permit applications,⁸ DOE does not need to perform additional impact assessments here, provided the maximum rate of transmission for all exports through a border system does not exceed the authorized limit of the system (paragraph (A) of this Order). In its Application, SPP committed to complying with all reliability limits on border facilities. App. at 4. The second part of the reliability inquiry is therefore satisfied by DOE regulatory oversight in addition to NERC's reliability enforcement.

III. FINDINGS AND DECISION

A. SPP Meets the Statutory Requirements to Export Electric Energy to Canada

As explained above, DOE has assessed the impact that the proposed export would have on the reliability of the U.S. electric power supply system. DOE has determined that the export of electric energy to Canada by SPP, as ordered below, would not impair the sufficiency of electric power supply within the United States and would not impede or tend to impede the coordination in the public interest of facilities within the meaning of FPA § 202(e).

B. SPP Qualifies for a NEPA Categorical Exclusion for Exports of Electric Energy

SPP's Application qualifies for DOE's categorical exclusion for exports of electric energy under the National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. §§ 4332(2) *et seq.* DOE's regulations set forth this categorical exclusion, codified as "B4.2," as follows:

Export of electric energy as provided by Section 202(e) of the Federal Power Act over existing transmission lines or using transmission system changes that are themselves categorically excluded.

10 C.F.R. Part 1021, App. B to Subpart D, § B4.2.

DOE has determined that actions in this category do not individually or cumulatively have a significant effect on the human environment and that, therefore, neither an environmental assessment nor an environmental impact statement normally is

⁷DOE issues Presidential permits pursuant to Executive Order 10,485, as amended by Executive Order 12,038. See 10 C.F.R. §§ 205.320-205.329.

⁸*E.g.*, *AEP Texas Central Co.*, OE Order No. PP-317, 2-3 (Jan. 22, 2007); *Montana Alberta Tie Ltd.*, OE Order No. PP-305, 2-4 (Nov. 17, 2008).

required. 10 C.F.R. § 1021.410(a). Further, in 2011, DOE formally reviewed its NEPA regulations and categorical exclusions, and determined that it was appropriate to retain the B4.2 categorical exclusion unchanged. *See* National Environmental Policy Act Implementing Procedures, 76 Fed. Reg. 214, 217 (Jan. 3, 2011); National Environmental Policy Act Implementing Procedures, 76 Fed. Reg. 9981, 9982 (Feb. 23, 2011).

To invoke this categorical exclusion, DOE must determine that, in relevant part, “[t]here are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal,” and that “[t]he proposal has not been segmented to meet the definition of a categorical exclusion.” 10 C.F.R. § 1021.410(b)(2), (3). “Extraordinary circumstances” include “unique situations” such as “scientific controversy about the environmental effects of the proposal.” *Id.* at § 1021.410(b)(2). DOE finds that SPP’s Application does not present such a circumstance, nor has it been segmented for purposes of this exclusion. SPP seeks to deliver electricity over existing transmission lines, which fits squarely within the B4.2 categorical exclusion. For these reasons, DOE will not require more detailed NEPA review in connection with this Application. *See, e.g.*, 10 C.F.R. §§ 1021.400(a)(1), 410; 40 C.F.R. § 1501.4(a).

C. Response to Comment

As noted in Section I, DOE received one comment on SPP’s Application. The comment, submitted on January 5, 2017, by Jean Public, opposes SPP’s export authorization. According to the commenter, energy created in the United States should remain here, otherwise a few rich people will make more money while the pollution associated with making the energy remains here.

Upon review, DOE finds that the evidence in the record does not support this comment, and further finds that SPP has satisfied the statutory criteria set forth in FPA § 202(e).

D. Conclusion

DOE grants SPP’s Application for export authority for a five-year term. SPP is authorized to export electricity to Canada using existing international transmission facilities owned by Basin Electric, subject to the limitations and conditions described in this Order.

DOE determines it unnecessary to grant SPP’s request for an interim order authorizing immediate sales of ‘emergency energy’. As indicated in SPP’s Application, Basin Electric already has authority, under EA-64 (March 6, 1980) and EA-64-A (December 18, 2009), to export electric energy over the Tioga-Sask Intertie. *See* Application at 7. Thus, any sales of emergency energy to SaskPower during the review of this Application should have been scheduled through Basin Electric, the holder of the EA.

IV. DATA COLLECTION AND REPORTING REQUIREMENTS

The responsibility for the data collection and reporting under orders authorizing electricity exports to a foreign country currently rests with the U.S. Energy Information Administration (EIA) within DOE. The Applicant is instructed to follow EIA instructions in completing Form EIA-111. Questions regarding the data collection and reporting requirements can be directed to EIA by email at EIA4USA@eia.gov or by phone at 1-855-342-4872.

Additionally, any change to the tariff of an entity with export authorization must be provided to DOE's Office of Electricity Delivery and Energy Reliability. 10 C.F.R. § 205.308(b).

V. COMPLIANCE

Obtaining a valid order from DOE authorizing the export of electricity under FPA § 202(e) is a necessary condition before engaging in the export. Failure to obtain such an order, or continuing to export after the expiration of such an order, may result in a denial of authorization to export in the future and subject the exporter to sanctions and penalties under the FPA. DOE expects transmitting utilities owning border facilities and entities charged with the operational control of those border facilities, such as ISOs, RTOs, or balancing authorities, to verify that companies seeking to schedule an electricity export have the requisite authority from DOE to export such energy.

DOE expects SPP to abide by the terms and conditions established for its authority to export electric energy to Canada, as set forth below. DOE intends to monitor SPP's compliance with these terms and conditions, including the requirement in paragraph G of this Order that SPP create and preserve full and complete records and file reports with EIA as discussed above.

A violation of any of those terms and conditions, including the failure to submit timely and accurate reports, may result in the loss of authority to export electricity and subject SPP to any applicable sanctions and penalties under the FPA.

VI. ORDER

Accordingly, pursuant to FPA § 202(e) and the Rules and Regulations issued there under (10 C.F.R. §§ 205.300-309), it is hereby ordered that SPP is authorized to export electric energy to Canada under the following terms and conditions:

(A) The electric energy exported by SPP pursuant to this Order may be delivered to Canada utilizing the existing international transmission facility owned by Basin Electric in accordance with the export limits authorized by DOE.

(1) The following international transmission facilities located at the United States border with Canada are currently authorized by Presidential permit and available for open access transmission⁹:

<u>Present Owner</u>	<u>Location</u>	<u>Voltage</u>	<u>Presidential Permit No.</u> ¹⁰
Basin Electric Power Cooperative	Tioga, ND	230-kV	PP-64

(2) The following are the authorized export limits for the international transmission lines listed above in subparagraph (A)(1):

(a) Exports by SPP made pursuant to this Order shall not cause the total exports on facilities authorized by Presidential Permit PP-64 (issued to Basin Electric Power Coop.) to exceed an instantaneous transmission rate of 150 megawatts (MW). The gross amount of energy which SPP may export over the PP-64 facilities shall not exceed 900,000 megawatt-hours (MWH) during any consecutive 12-month period.

(B) Changes by DOE to the export limits in other orders shall result in a concomitant change to the export limits contained in subparagraph (A)(2) of this Order.

(C) SPP shall obtain any and all other Federal and state regulatory approvals required to execute any power exports to Canada. The scheduling and delivery of electricity exports to Canada shall comply with all reliability criteria, standards, and guidelines of NERC, reliability coordinators, Regional Entities, RTOs, ISOs or balancing authorities, or their successors, as appropriate, on such terms as expressed therein, and as such criteria, standards, and guidelines may be amended from time to time.

(D) Exports made pursuant to this authorization shall be conducted in accordance with the applicable provisions of the FPA and any pertinent rules, regulations, directives, policy statements, and orders adopted or issued thereunder, including the comparable open access provisions of FERC Order No. 888, as amended.

(E) The authorization herein granted may be modified from time to time or terminated by further order of DOE. In no event shall such authorization to export over a particular transmission facility identified in subparagraphs (A)(1) and (2) extend beyond the date of termination of the Presidential permit or treaty authorizing such facility.

⁹ This Order authorizes the export of electricity over any "authorized international transmission facility," which is intended to include both large transmission lines and smaller distribution lines that have received a Presidential permit. However, the list in subparagraph (A)(1) of current facilities only includes transmission lines.

¹⁰ These Presidential permit numbers refer to the generic DOE permit number and are intended to include any subsequent amendments to the permit authorizing the facility.

(F) This authorization shall be without prejudice to the authority of any state or state regulatory commission for the exercise of any lawful authority vested in such state or state regulatory commission.

(G) SPP shall make and preserve full and complete records with respect to the electric energy transactions between the United States and Canada. SPP shall collect and submit the data to EIA as required by and in accordance with the procedures of Form EIA-111, "Quarterly Electricity Imports and Exports Report," And all successor forms.


(H) In accordance with 10 C.F.R. §205.305, this export authorization is not transferable or assignable, except in the event of the involuntary transfer of this authority by operation of law. Provided written notice of the involuntary transfer is given to DOE within 30 days, this authorization shall remain in effect temporarily. The authorization shall terminate unless an application for a new export authorization has been received by DOE within 60 days of the involuntary transfer. Upon receipt by DOE of such an application, this existing authorization shall continue in effect pending a decision on the new application. In the event of a proposed voluntary transfer of this authority to export electricity, the transferee and the transferor shall file a joint application for a new export authorization, together with a statement of the reasons for the transfer.

(I) Nothing in this Order is intended to prevent the transmission system operator from being able to reduce or suspend the exports authorized herein, as necessary and appropriate, whenever a continuation of those exports would cause or exacerbate a transmission operating problem or would negatively impact the security or reliability of the transmission system.

(J) SPP has a continuing obligation to give DOE written notification as soon as practicable of any prospective or actual changes of a substantive nature in the circumstances upon which this Order was based, including but not limited to changes in authorized entity contact information or NERC compliance registry status.

(K) This authorization shall be effective as of February 7, 2017, and remain in effect for a period of five (5) years from that date. Application for renewal of this authorization may be filed within six months prior to its expiration. Failure to provide DOE with at least sixty (60) days to process a renewal application and provide adequate opportunity for public comment may result in a gap in SPP's authority to export electricity.

Issued in Washington, D.C., on February 7, 2017.



Brian Mills
Senior Planning Advisor
Office of Electricity Delivery and
Energy Reliability