

REPORT OF THE INTERNATIONAL ENERGY TRANSACTIONS COMMITTEE

This report summarizes three areas of significant energy policy development affecting the United States in recent years.¹ First, it describes developments in U.S. international energy trade and transactions. As more fully summarized in the paragraph below, this includes developments in the U.S. energy trade with its immediate neighbors, Canada and Mexico, and in broader world energy markets including liquefied natural gas (LNG) and the efforts by U.S. companies to develop foreign petroleum and natural gas resources. Second, it describes developments in the European Union (EU or the Union) in the creation of competitive energy markets, assuring security in energy supply and encouraging the development of renewable and domestic supplies. Third, it highlights the role of U.S. companies and Professionals participating in modern energy service system development in developing nations, particularly in supporting electrification and transmission/generation project development.

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I. UNITED STATES INTERNATIONAL ENERGY TRADE

The U.S. international energy trade and transactions may be separated into five components: (i) Canadian energy trade; (ii) Mexican energy trade; (iii) import/export of LNG; (iv) transactions involving the participation of U.S.

1. The International Energy Transactions Committee acknowledges the substantial drafting contributions made to this Report by Walter R. Hall II (non-EU Market Liberalization Matters) and by Philip M. Marston (EU Market Liberalization Matters). Non-drafting contributions through editing and comment have been made by Andrea Chambers and Jason Czyn.

companies in the development of international petroleum/natural gas resources and importation of petroleum/natural gas to close the gap between domestic/Canadian supply and demand; and (v) other trade; such as, the U.S. export/import of coal used as an electric generation fuel and import of uranium used for the same purpose. Set forth below is a brief description of recent and expected near-term developments in each of these areas, including particularly a discussion of significant government agency decisions impacting that trade.² The Obama Administration's stated intention to increase U.S. reliance upon domestic, renewable energy resources as a way to increase energy independence and security is a major development whose effect on energy trade is yet to be determined.³

A. U.S.-Canada Energy Trade

Canada supplies the United States with much of its imported energy, particularly petroleum and natural gas. For example, the United States has imported petroleum for more than forty years, importing approximately sixty percent of its requirements over the past several years.⁴ In 2007, Canada supplied approximately twenty percent of those imports, making that country the largest supplier of imported petroleum to the United States.⁵ This trade relationship has been undergoing changes in recent years as both U.S. and Canadian conventional production of crude oil has been declining, and the loss has been made up with increased production from Canadian "oil-sands" in Alberta, Canada.⁶ Due to its high viscosity and dense rock structure, specialized production methods are required to successfully produce from these deposits, transport and refine this petroleum.⁷ Also, new pipelines have been or are being developed to transport this new supply from its Alberta locations throughout the United States.⁸ Production of "oil-sands" petroleum is expected to triple by 2015 (and thereby equal thirty percent of current U.S. Gross Petroleum Imports

2. Trade in energy producing equipment and services is addressed briefly as to Third World Countries, but is otherwise viewed as beyond the scope of this Report.

3. THE DEMOCRATIC PARTY, ENERGY INDEP. (2009), http://www.democrats.org/a/national/american_dream/economy/energy/; Derek Sands & Alexander Duncan, *Obama Advisers Set Blueprint for Early Action in Energy Area, Including FERC Siting Power*, ELEC. UTIL. WEEK, Nov. 17, 2008, at 1; Brian Hansen, *Obama Looks to Chu, Others to Transform Energy Mix*, INSIDE ENERGY EXTRA, (Dec. 22, 2008) at 1.

4. UNITED STATES DEP'T OF ENERGY (DOE), ENERGY INFO. ADMIN. (EIA), ANNUAL ENERGY OUTLOOK 2009 EARLY RELEASE 6, 19, Tables A1 & A11 (2008) (hereinafter ANNUAL ENERGY OUTLOOK 2009); U.S. DOE, EIA, ANNUAL ENERGY OUTLOOK 2008, 3-11, 77-78 (2008) (hereinafter ANNUAL ENERGY OUTLOOK 2008); NATIONAL ENERGY BOARD (NEB), CAN. PIPELINE TRANSP. ASSESSMENT 1-27 (2008) (hereinafter CANADIAN PIPELINE TRANSP. ASSESSMENT). The EIA substantially reduces its estimates of future imported petroleum in its 2009 Forecast, expanding on trends described in the 2008 forecast, reducing the level of supply provided by imports to forty percent in 2030, reflecting in substantial part expected growth in the use of bio-fuels. The data provided in the text is taken from the 2009 Forecast unless otherwise noted.

5. *Id.*

6. *Id.*

7. CANADIAN PIPELINE TRANSP. ASSESSMENT, *supra* note 4; NEB, Facilities of Tolls & Tariffs, Reasons for Decision, Enbridge Pipelines, Inc.—Alberta Clipper Expansion Project, OH-4-2007 (February 2008); NEB, Facilities, Reasons for Decision, Enbridge S. Lights GP on Behalf of Enbridge S. Lights LP & Enbridge Pipelines, Inc., OH-3-2007 (February 2008); NEB, CANADIAN ENERGY OVERVIEW 2007 (May 2008); NEB, CANADA'S OIL SANDS—OPPORTUNITIES & CHALLENGES TO 2015: AN UPDATE (2006); *Oil Sands Surge Prompts US Pipeline Rethink*, PETROLEUM INTELLIGENCE WEEKLY (July 28, 2008).

8. *Id.*

though not all such production will be exported).⁹ Studies are underway to determine the economics and infrastructure requirements to reverse the flow of petroleum in certain U.S. domestic pipelines to reflect this growing supply source and its possible replacement of Gulf of Mexico or other U.S. domestic production.¹⁰ Nonetheless, because of the difficulty and high-cost of production of this resource, the projected growth in its production in the near term is uncertain.

The U.S.-Canada natural gas trading relationship is also changing. However, where U.S. petroleum trade with Canada is expected to increase both in the near and longer term, natural gas trade is estimated to decline, at least over the longer term.¹¹ During the past several years, Canada supplied the United States with an average annual volume of natural gas of approximately three TCF, roughly fourteen percent of U.S. natural gas supply and eighty-five percent of its total natural gas imports.¹² However, the amount supplied fluctuated somewhat from year to year, unlike in previous periods when this trade continuously increased from its lows in the early 1980s.¹³ Reliance upon Canadian supplied natural gas is greatest in the Northeast and California, where natural gas serves as a major electric generation fuel as well as in direct heating and process applications. As with petroleum, both U.S. and Canadian conventional natural gas production has been declining for a number of years. Moreover, Canadian natural gas demand has been increasing resulting in less natural gas available for export to the United States. More significant than any of the preceding factors, U.S. natural gas production has increased by approximately eight percent due primarily to expanding production from “unconventional sources” (i.e. shale formations in Texas, Louisiana, Arkansas, and the Alleghany region), and is projected by the U.S. Department of Energy (DOE) Energy Information Administration (EIA) to further increase and maintain that level through 2015.¹⁴ Indeed, this expansion in production is expected to be sufficiently great that the EIA projects that Canadian natural gas imports will be reduced by more than sixty percent by 2015 (i.e. to 1.1 TCF), and that total U.S. natural gas imports from all sources (sixteen percent in 2007) will decrease to less than three percent

9. *Id.*; ANNUAL ENERGY OUTLOOK 2009, *supra* note 4, at 4.

10. See sources cited at *supra* note 7.

11. ANNUAL ENERGY OUTLOOK 2009, *supra* note 4, at 2, 11-12, 20, Table A1 & A13; U.S. DOE, EIA, NAT. GAS MONTHLY, Dec. 2008, Table 4 (2008); ANNUAL ENERGY OUTLOOK 2008, *supra* note 4, at 3-11, 77-78 (2008); Canadian Energy Outlook 2007, *supra* note 7 at 15-32. Unconventional U.S. natural gas production increases from 9.2 TCF (approximately forty-five percent of 2007 supply) to 12.2 TCF in 2030 (approximately fifty-six percent of supply) under the 2009 EIA projections. ANNUAL ENERGY OUTLOOK 2009, *supra* note 11.

12. *Id.*

13. *Id.*

14. *Id.* In addition to typical increases in demand from end-users, Canadian needs for natural gas have increased both because significant quantities of natural gas are used to produce petroleum from “oil-sands” deposits and to reduce green-house-gas emissions (particularly in Ontario which is replacing its coal generation ultimately with nuclear but in the near term with natural gas). Jim Magill, *Burgeoning Production From Shale Plays Will Stave Off Need For Big LNG Imports, Says Report*, INSIDE F.E.R.C., Oct. 13, 2008 at 7; Joel Kirkland, *EIA: Gas Imports to Drop by 2030 as U.S. Output Grows; Economy to Stem Power-Sector Growth*, INSIDE F.E.R.C., Dec. 22, 2008 at 4; *U.S. Shale Gas Lives on But Price Pressure Mounting*, INT'L. PETROLEUM FIN., Dec. 9, 2008; Greg Couturier, *Study Sees U.S. Shale Adding Over 12 Bcf/d of New Supplies*, NAT. GAS WEEK, Nov. 3, 2008; Barbara Shook, *Falling Canadian Exports to Hit Markets Much Harder after 2015*, NAT. GAS WEEK, Sept. 1, 2008.

in 2030.¹⁵ While Canada's National Energy Board (NEB) similarly projects a reduction in U.S.-Canada natural gas trade for the reasons stated, neither it nor other analysts fully concur with the EIA projection. Unconventional natural gas supply development is capital intensive and the resulting supply higher in cost than conventional on or off-shore resources. Moreover, the current credit/financial crisis and recent reductions in natural gas well-head prices below six dollars are restricting capital availability to develop this resource, and may restrict its growth at least in the near term.

As noted further below, concerns with assuring an adequate and reliable supply of natural gas have resulted in the expansion (or planned expansion) of current U.S. LNG supply terminals, construction of four new terminals and plans to construct more than a dozen additional such terminals. Terminals are also being constructed in Canada to meet both Canadian and U.S. natural gas demand. For example, on September 4, 2008 Canada's NEB approved an application by the Canadian subsidiary of a Spanish company (Repsol Energy Canada Ltd.) for a twenty-five year license to import LNG to its Canaport TM LNG Terminal near Saint John, New Brunswick.¹⁶ Once regasified, this LNG will be used to supply markets in both Eastern Canada and the Northeast United States. Although supply contracts have not yet been signed, LNG supplies are expected to be obtained from Trinidad and Tobago.¹⁷

Electricity trade with Canada is also significant, specifically involving Quebec, Manitoba, and British Columbia, which have extensive hydro-electric resources whose development has at times exceeded their own domestic needs. Several states (Vermont, Maine, and states in the Pacific Northwest) have historically obtained significant portions of their electric supply from Canadian imports. In the 1970s and 80s, major transmission lines were constructed from then recently developed Canadian hydro-electric plants to load centers in the United States to permit long-term, bulk sales of hydro-electric supply to the Northeast (including PJM, NY, and New England totaling approximately 2000 MW) and the Pacific Northwest.¹⁸ Currently, this process is continuing with the

15. ANNUAL ENERGY OUTLOOK 2009, *supra* note 4 at 2, 11-12, 20, Table A1 & A13.

16. NEB, LNG Import Gas Import, Repsol Energy Can., Ltd., GH-1-2008 (September 2008).

17. *Id.* Repsol's export license is limited to the regasified LNG. Its request to also be permitted to export domestically produced natural gas was denied as it has not identified the source from which this gas would be obtained. The NEB approved the LNG import and export licenses under its "market-based procedure"(MBR) in which the NEB evaluates whether the requested action is in the Canadian public interest, and could not find the export of domestically produced natural gas to meet this standard absent identification of its source and the terms of its export. *Id.* A detailed description of the MBR is provided in the Committee's 2003 Report at 24 ENERGY L.J. at 429-432. At least two additional LNG terminals have been proposed for construction in Eastern Canada to serve, in part, Northeast US natural gas demand. *Maritimes & Northeast Pipeline LLC*, 118 F.E.R.C. ¶ 61,137 (2007); *NEB Approves New Receipt Point on TransCanada for Regasified LNG produced at Gros Cacouna Terminal in Quebec*, FOSTER NATURAL GAS REPORT (Foster Associates) No. 2653 at 21 (July 27, 2007); *Maritimes & Northeast Pipeline Signs Two Agreements*, 16 no. 9 WORLDWIDE ENERGY, Dec. 2005.

18. *See, e.g.*, *Re NSTAR Electric Co.*, 125 F.E.R.C. ¶ 61,371 (2008); *Re Northeast Utilities & NSTAR Electric Co.*, Petition for Declaratory Order, Docket No. EL09-20-000 (December 12, 2008), <http://www.ferc.gov/docs-filing/elibrary.asp>, Submittal 20-081215-5142; *Re Montana Alberta Tie Ltd.*, 116 F.E.R.C. ¶ 61,071 (2006); NEB, REASONS FOR DECISION, MONTANA ALBERTA TIE LTD. A18997 (2007); *BC Hydro Plan calls for 2,400 MW of New Hydro*, ELEC. POWER DAILY, June 17, 2008, at 5 (to be used in part for sales to the United States where not needed for Canadian load); *BC Hydro Proposes to Increase Capacity for Power Flow Across the U.S.-Canadian Border*, PLATTS POWER MARKETS WEEK, June 5, 2008, at 13;

planned development of new high voltage transmission to transport bulk electric supply from new hydro plants in Canada to New England and Minnesota, and to deliver wind/fossil generation from Alberta to Montana.¹⁹ Pricing is typically on an avoided cost or split savings basis, with the advantage of the arrangement being the development and use of non-greenhouse gas (GHG) emitting electricity sources as well as cost savings. Maine and New Brunswick have also been jointly studying the possibility of expanding interconnections and participating in joint supply development, including the possibility of Maine's withdrawing from ISO-New England and forming a new, international market with New Brunswick.²⁰ Maine recently determined not to pursue this latter option for the time being, instead focusing on obtaining desired reforms in ISO-NE cost allocation and governance.²¹ Although not as prevalent, discussions and studies of similar arrangements to support the development of additional Canadian nuclear generation plants (i.e. in Ontario and New Brunswick) have also been conducted.²²

Certain provinces in Canada restructured their electric industries to unbundle functions (generation, transmission, and distribution), and to establish competitive markets and independent transmission system operators. Major Canadian generation companies (largely government owned) have established marketing subsidiaries (Powerex of British Columbia and HQ Electricity Services of Quebec) that market their power into the United States.²³ These marketers have engaged in all aspects of market participation in the United States, including sales under bilateral contracts, participation in RTO run auction markets, purchasing transmission rights, etc. Manitoba Hydro, a Crown Corporation operating as an integrated electric supplier, has participated directly in the Midwest ISO but not as a transmission-owning member, which is not permitted under Canadian law, but rather under a separate Coordination Agreement.²⁴ Both Ontario and New Brunswick System Operators have worked with their U.S. counterparts to complete studies and implement operating/market procedures to eliminate barriers or seams that reduce international trade between

Manitoba Hydro in \$2.2 billion deal with Excel, ELEC.POWER DAILY (11/6/06)(sale of hydro generated electricity beginning in 2015 when current long-term sale pact ends); Housley Carr, *Newfoundland & Labrador Hydro to Export "Significant Power" to US Under Province Plan*, ELEC. UTIL. WEEK, Sept. 17, 2007, at 29 (construction of new 2,824 MW Lower Churchill Hydroelectric Plant & Wind Generation).

19. See generally, sources contained in *supra* note 18.

20. MAINE PUB. UTIL. COMM., INVESTIGATION OF ME UTIL. CONTINUED PARTICIPATION IN ISO-NE, (2009); *Central Maine Power Co & Maine Pub. Serv. Co.*, 125 F.E.R.C. ¶ 61,182 (2008) (new trans. lines connecting to Canada approved); MAINE PUB. UTIL. COMM., INTERIM REPORT—PURSUANT TO "A RESOLVE TO DIRECT THE PUB. UTIL. COMM. TO EXAMINE CONTINUED PARTICIPATION BY TRANSMISSION AND DIST. UTIL. IN THIS STATE IN THE NEW ENGLAND REG. TRANSM. ORG." (2007) .

21. INVESTIGATION OF ME UTIL. CONTINUED PARTICIPATION IN ISO-NE, *supra* note 20.

22. *Maine, New Brunswick Hope to finish Study on Cross Border Pool in 2008*, ELEC. UTIL. WEEK, Feb. 19, 2007 at 22; *Canada Considers Building 1,085 MW Nuclear Plant to Sell Power to New England*, ELEC. UTIL. WEEK, Aug. 13, 2007, at 27 (New Brunswick); *Canada's Bruce Power Seeks to Export to US up to 2,000 MW from Nuclear Plant*, ELEC. UTIL. WEEK, Dec. 11, 2006, at 24.

23. *DC Energy LLC v. H.Q. Energy Serv. Inc.* 124 F.E.R.C. ¶ 61,295 (2008); *Powerex Corp.*, 125 F.E.R.C. ¶ 61,179 (2008)(provision of regulating services); *Powerex Corp.*, 106 F.E.R.C. ¶ 61,304 (2004); *Canadians push NERC to better reflect international nature of ERO in application*, INSIDE F.E.R.C., Jan. 23, 2006 at 5.

24. *Manitoba Hydro Participates in Midwest ISO Under Coordination Agreement*, CAN. NEWSWIRE, Sept. 28, 2001.

their systems, and Canada has participated in development of the North American Electric Reliability Council.

In a 2003 Report, Canada's NEB concluded that, while U.S. and Canadian industry restructuring had increased the opportunities for energy trade between the two countries, actual trade had not increased.²⁵ Trade has in fact been relatively stable since the mid-1990s at approximately forty to fifty TWH, declining briefly and then returning to its mid-1990s value. As the NEB explained, the cause of this decline is growing Canadian electricity demand and the absence of new generation development, meaning that Canadian low-cost or environmentally benign resources are needed to meet Canadian loads and are not available to support international trade. However, if the proposed new generation and transmission projects noted above are completed with the support of long-term supply sale agreements with U.S. load serving entities, this observed trend may well change over the next decade, resulting in substantial increases.

B. U.S.-Mexican Energy Trade

U.S.-Mexican energy trade is not as extensive as that with Canada. Mexico is a net importer of natural gas (including modest levels from the United States), but is the third largest exporter of crude oil to the United States (after Canada and Saudi Arabia).²⁶ Until recently, only three small, asynchronous interconnections existed between the Mexican and U.S. electricity grids (i.e. in Texas and New Mexico), which have been used solely for emergency and reserve sharing purposes. In August 2007, a fourth and larger, bi-directional interconnection (Sharyland-150 MW) was completed that will also be used for emergency and reserve sharing, but which is available for commercial power transfers.²⁷ In May 2008, an LNG terminal became operational in Baja, California in Mexico.²⁸ The terminal, one of a number that have been proposed or are under construction on both coasts of Mexico, is owned by a major California utility (Sempra) and will supply regasified LNG both in Northern Mexico and into the United States to support gas-fired generation in Arizona.²⁹ A number of the other proposed terminals also are intended to serve U.S. as well as Mexican demand. Finally, in August 2008, the Governors of four U.S. border states (California, Arizona, New Mexico, and Texas) and six Mexican provinces signed a declaration agreeing to cooperate in the development of renewable energy projects located in Mexico to provide electricity to the U.S. market.³⁰

25. NEB, ANNUAL REPORT 2003 (2003); *Restructured Electricity Market has not resulted in increased Exports* NRB releases Report on the Canadian Electricity Market, CAN. NEWSWIRE, Jan. 23, 2003; ANNUAL ENERGY OUTLOOK 2009, *supra* note 4, at Table A10.

26. ANNUAL ENERGY OUTLOOK 2009, *supra* note 4.

27. *Electric Transmission Texas, LLC*, 121 F.E.R.C. ¶ 61,007 (2007).

28. *North Baja Pipeline LLC*, 124 F.E.R.C. ¶ 61,217 (2008).

29. *Id.*; *North Baja Pipeline LLC*, 124 F.E.R.C. ¶ 61,284 (2008); *North Baja Pipeline LLC*, 124 F.E.R.C. ¶ 61,010 (2007); *Mexico's Energy Boom Has Gaps In Proven Natural Gas Dev. Scheme; Privatization Steps Could Help Investment, According to DOE Assessment*, FOSTER NATURAL GAS REPORT (Foster Associates) No. 2626, at 15 (Jan. 19, 2007).

30. *Border States Seek Cooperation on Renewables*, ELEC. POWER DAILY, Aug. 21, 2008.

C. Import/Export of Liquefied Natural Gas

In the 1970s and early 1980s, concern existed with whether domestic natural gas production and Canadian imports would be sufficient to meet demand. Four liquefied natural gas import terminals were constructed on the East Coast and in the Gulf of Mexico.³¹ However, after an initial period of significant operation, they were largely unused over the fifteen year period up to 2003 as domestic and Canadian supply met U.S. demand more cost-effectively.³² Early in the present decade, for reasons described above in connection with the discussion of Canadian energy trade, these concerns of domestic/Canadian supply inadequacy were rekindled by the decline in production and new supply discoveries from domestic conventional, Gulf of Mexico and Canadian production. Programs were developed to expand the existing four terminals and proposals were presented to build more than a dozen additional terminals on both the East, West and Gulf coasts, four of which have or are nearing completion.³³

Significant imports of LNG, principally from Trinidad and Tobago, were received in 2005 and 2006, and import volumes peaked in 2007 at .73 TCF or approximately three percent of U.S. natural gas supply.³⁴ However, volumes declined substantially in 2008 and are projected by the EIA to remain quite small (maximum of 1.3 TCF—never exceeding approximately six percent of U.S. supply) through 2030.³⁵ In some measure, history is repeating itself. As previously noted, U.S. domestic natural gas production increased by eight percent in 2008 and is expected to grow further in coming years, with production from unconventional on-shore gas supplies (i.e. from gas shales—the Barnett in Texas, Haynesville in Arkansas, and Marcellus in the Alleghany region, etc.) more than compensating for the reduction in U.S. domestic and Canadian conventional production over this entire period. Reliance upon these resources is predicted to be more cost-effective than upon LNG volumes despite the expected large increase in LNG supply availability in coming years.

Successful attraction of LNG supplies to the U.S. market at the present time suffers from two significant impediments. First, much of the current supply of LNG is from developing countries whose economies and demand for natural gas are substantially growing. Pressure is mounting in certain of these countries to use a greater portion of produced volumes domestically rather than for export. Second, U.S. market prices for natural gas are as little as one-half those of large and growing Asian markets and thus the United States is unable to attract large volumes of LNG at cost-effective prices as compared to its domestic and

31. DOE, LIQUIFIED NAT. GAS: UNDERSTANDING THE BASIC FACTS (2005); DOE, U.S. NAT. GAS IMPORTS AND EXPORTS: 2007, http://www.eia.doe.gov/pub/oil_gas/natural_gas/feature_articles/2008/ngimpexp/ngimpexp.pdf; DOE, U.S. NAT. GAS IMPORTS AND EXPORTS: 2006, http://www.eia.doe.gov/pub/oil_gas/natural_gas/feature_articles/2009/ngimpexp/ngimpexp.pdf.

32. *Id.*

33. *See generally, supra* notes 11 & 14, 31 including sources cited therein; *see also* DOE, NAT. GAS MONTHLY FEB. 2009, Tbls. 1 & 4 (2009); Barbara Shook, *Been There, Done That; U.S. LNG Sector Snared in Boom-Bust Loop*, NAT. GAS WEEK, Oct. 6, 2008; *Liquefied Natural Gas Markets in U.S. Emerge in Uncertain Times*, FOSTER NATURAL GAS REPORT (Foster Associates) No. 2689, at 5 (April 11, 2008); EIA, COUNTRY ANALYSIS BRIEFS, CARIBBEAN (2008), <http://www.eia.doe.gov/emeu/cabs/Caribbean/pdf>.

34. *Id.*

35. *Id.*

Canadian supplies.³⁶ Future growth in LNG supplies, and particularly growth from Middle East producers, may, however, overcome these obstacles at some point in the future.

D. Participation by U.S. Companies in the Development of International Petroleum Resources and Import of Petroleum to Close the Supply Gap

U.S. companies are active around the world in developing petroleum and natural gas resources that contribute to world trade in these commodities, including trade to the United States. As previously described, almost fifty percent of U.S. petroleum supplies come from sources other than domestic and Canadian production.³⁷ U.S. companies, such as Exxon, Chevron and others have managed or participated in the development of natural gas and petroleum discoveries in Russia, Africa, the Caspian, Latin America and other places too numerous to mention. Over the past several years, however, these activities have become considerably more challenging both as competition to develop available world reserves has increased and as host countries have focused upon the need for such resources to supply growing domestic needs. Also, a phenomenon termed “natural resource nationalism” has led host countries to require at least participation and not infrequently control of development and production operations by state-owned companies and substantial royalty payments that reduce profits available from such operations.³⁸ Major international companies are, thus, often limited to the most technically challenging and risky projects (i.e. deep water drilling or heavy oil production) in many producing countries.³⁹

Nonetheless, a number of major project accomplishments in petroleum and natural gas development have occurred over the past two years. For example, the West African Gas Pipeline (managed by U.S. oil major Chevron) became operational in November 2008, the massive Tenghiz oil field topped production in the Caspian Basin after a number of years of development, and agreements have been reached with Russia to expand the Caspian Pipeline system to permit that production to reach world markets.⁴⁰ In addition, both oil and LNG

36. *Id.*

37. ANNUAL ENERGY OUTLOOK 2009, *supra* note 4.

38. Press Release, Int'l Energy Agency, New Energy Realities—WEO Calls for Global Energy Revolution Despite Economic Crisis (Nov. 12, 2008).

39. Difficulties faced by international oil and gas producers were noted by the International Energy Agency (IEA) in its 2008 World Energy Outlook as follows: “A sea change is underway in the upstream oil and gas industry with international oil companies facing dwindling opportunities to increase their reserves and production. In contrast, national companies are projected to account for about 80% of the increase of both oil and gas production to 2030.” *Id.* quoting Nobuo Tanaka, Executive Director, IEA. The issue was also further addressed in the Report itself at p. 44 in which the IEA argued for the need for “partnerships” between international and national oil companies if World oil and natural gas demand is to be met in coming decades. IEA, WORLD ENERGY OUTLOOK 2008, (hereinafter Energy Outlook 2008) *See, e.g.*, Indonesia Gets Tough with Exxon over Natuna Exploration Data, International Oil Daily (1/20/09); Venezuela Considers Options to Lure Back Western Energy Firms, International Oil Daily (1/16/09); Paul Sampson, *Turkmenistan's Record Gas Find Could be Tricky to Develop*, NEFTE COMPASS, Nov. 26, 2008; Michael Ritchie, *Majors Share Responsibility for New-Look Kashagan*, NEFTE COMPASS, Nov. 6, 2008; Anna Shiryaevskaya, *Moscow weighs in on Exxon Mobil, Gazprom dispute over Sakhalin 1 Gas Supplies*, 86 PLATTS OILGRAM NEWS 205 at 5 (Oct. 16, 2008); *Nigeria Gives Warning on LNG Project Plans*, 86 PLATTS OILGRAM NEWS 192 at 5 (Sept. 29, 2008); *Exxon's Olsen Makes the Case for the IOCs*, PETROLEUM INTELLIGENCE WEEKLY, Feb. 25, 2008.

40. *See, e.g.*, *Chevron Tops in Kazakhstan*, OIL DAILY, Jan. 20, 2009; *Sakhalin Energy Starts Gas Production*, RUSSIA & CIS ENERGY NEWSWIRE, Jan. 15, 2009; *First Gas Has Finally Started Flowing through*

production has been achieved at Russia's Sakhalin resource and Angolan deepwater petroleum resources are being increasingly identified and produced. A less positive development has been the formation of an organization of natural gas producing states to consult on pricing and supply matters which many consider to be similar to the Organization of Petroleum Exporting Countries (OPEC).⁴¹

E. Other International Energy Trade Activities

The United States also both imports and exports coal used as an electric generation fuel. Imports are in small quantities and from South America, while exports have grown substantially in recent years and amounted to more than \$5.8 billion through the first nine months of 2008 (almost double the volume of 2007). However, imports slowed in the second half of 2008, reflecting reduced demand in destination countries as well as reduced prices for their alternative fuels resulting from the worldwide economic slowdown. The EIA projects a modest growth in this export trade through 2010 followed by relative stability. While the United States has a domestic uranium resource, lower costs have been available for existing nuclear plants from importing un-enriched uranium from larger deposits and mines in Canada and Australia. Recent exploration has also identified and there is under development new uranium resources in Kazakhstan, Namibia and Niger, along with substantial known reserves in Russia.⁴²

II. EUROPEAN UNION ENERGY POLICY AND MARKET LIBERALIZATION DEVELOPMENTS

A. Pre-2008 Internal Electricity & Natural Gas Market Liberalization

With regard to liberalization of natural gas and electricity markets, the EU has continued the process begun in the latter part of the 1990s with a first series of directives that adopted open-access restructuring rules for both natural gas and electricity networks similar to those existing in the United States.⁴³ In 2003, the EU adopted a second set of directives and regulations (hereafter referred to as the "Second Energy Package") to govern network access and inter-State commerce (known in EU parlance as "cross-border trade").⁴⁴ Electricity and

WAGP to Ghana, MIDDLE E. & AFRICA OIL & GAS INSIGHTS, Jan. 1, 2009; *Caspian Pipeline Expansion Gets Green Light*, PETROLEUM INTELLIGENCE WEEKLY, Dec. 22, 2008; *Sakhalin-1 Project Receives Award for Excellence*, ASIA PULSE, Dec. 4, 2008; *Thompson & Knight: Firm Advises Sonangol in \$7 Billion Natural Gas Transaction*, RES. WEEK, Nov. 16, 2008, at 78; *Chevron Breaks New Ground in Mideast Gulf*, PETROLEUM INTELLIGENCE WEEKLY, Oct. 13, 2008; *Production Begins at ExxonMobil Angola Developments*, RES. WEEK, Aug. 31, 2008, at 86.

41. Nelli Sharushkina & Andrei Glazov, *Formal Gas Group Established in Moscow*, INT'L OIL DAILY, Dec. 24, 2008.

42. ANNUAL ENERGY OUTLOOK 2009, *supra* note 4, at Table A15; PLATTS COAL OUTLOOK, Vol. 32, No. 46, p. 1 (8-17-08); Julian Steyn, *Fuel Review: Supply-Mining the Supply Gap*, NUCLEAR ENG'G INT'L, Sept. 5, 2008, at 10.

43. The reader will find a discussion of these 1990s initiatives, together with citations, in this Committee's Report at 24 ENERGY L. J. 429, 433-444 (2003) (hereinafter 2003 COMM. REP.). In addition, the European Union provides a summary of existing legislation governing the internal market for gas and electricity at <http://europa.eu/scadplus/leg/en/s14002.htm> (last visited March 6, 2009).

44. Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning Common Rules for the Internal Market in Electricity; Directive 2003/55/EC of the European Parliament and of

Natural Gas Directives 2003/54 and 2003/55 established in principle a right to non-discriminatory, third-party access to electric and natural gas transmission and distribution networks at published regulated tariffs as well as rules requiring legal and accounting separation of transmission and distribution networks to achieve independence in decision-making respecting such networks.⁴⁵ Retail customers were further permitted to choose amongst competitive suppliers beginning in July 2004 for non-household customers and July 2007 for all remaining customers, including household customers. The Second Energy Package also built on the initial directives' requirement for each Member State to create some type of regulatory authority with certain minimum responsibilities to "avoid abuse of a dominant position and any predatory behavior."⁴⁶ The regulatory bodies were to set tariffs for transmission and distribution service, to establish and regulate system access terms and to provide rules for the provision of balancing services, as well as to engage in dispute settlement. Transmission System Operators were also defined and established with the responsibility to dispatch electricity or natural gas over the system, to plan its expansion and to undertake other matters.⁴⁷ Measures were also included to assure maintenance of universal service, protect vulnerable customers, provide transparency for customers on fuel source and environmental impact of service supplied and to provide security of supply.

Despite these efforts, however, the pace of implementation of competitive markets for gas and electricity following the Second Energy Package was slower and more difficult than desired by the EU leadership (as detailed below). As a result the EU has sought to accelerate the pace of reform with a package of new laws dubbed the "Third Internal Energy Market Package" (Third Energy Package).⁴⁸ The Third Energy Package has progressed through its initial reading in the European Parliament under the co-decision procedure and received approval by the European Council in early 2009.⁴⁹ Final promulgation is expected following further action by the European Parliament later in 2009, but the drafts as approved by the European Council in early 2009 are expected to be ultimately adopted with little further change.⁵⁰ A full description of the new rules would require a lengthy article and is outside the scope of this brief summary which is intended only to provide a bare outline of the new developments and point the reader to the applicable source materials.

the Council of 26 June 2003 concerning Common Rules for the Internal Market in Natural Gas; Regulation (EC) No. 1228/2003 of the European Parliament and of the Council of 26 June 2003 on Conditions for Access to the Network for Cross-Border Exchanges in Electricity; Regulation (EC) No. 1775/2005 of the European Parliament and of the Council of 28 September 2005 on Conditions for Access to the Natural Gas Transmission Networks. The Directives repealed the two earlier EU Directives (Directive 96/92/EC & 98/30/EC), which similarly had sought to establish and govern competitive internal, EU electric and natural gas markets.

45. Directive 2003/54/EC, *supra* note 44; Directive 2003/55/EC, *supra* note 44.

46. See generally, 2003 COMM. REP. *supra* note 43, at 440-443, for a discussion of the provisions of the initial directives requiring the establishment of regulators and the creation of a voluntary association of European Energy Regulators.

47. See sources cited at *supra* note 44.

48. See sources cited at *infra* notes 58-62.

49. Press Release, Council of the European Union, The Council Adopts Common Positions on the Internal Energy Market Package (January 12, 2009) (hereinafter Council Adoption Release).

50. The Third Package proposals were submitted by the European Commission on Sept. 19, 2007.

To monitor the progress of its restructuring efforts, the EU began conducting annual benchmarking exercises in 2000. The benchmarking reports monitor implementation of the EU legislation and help evaluate the practical results of the reform initiatives in each of the Member States.⁵¹ The 2007 report (published in April of 2008) concluded quite bluntly that market integration under existing reforms was “still far from a success” and that “[w]ith very few exceptions, electricity and gas markets in the EU remain national in economic scope with limited competition.”⁵² Various shortcomings were identified and the report concluded that, despite some progress, notably on cross-border coordination at the regional level, “major barriers” remained to the efficient functioning of the market.⁵³ A “crucial factor” identified in this regard was insufficient implementation of prior EU legislation. In sum, the report concluded that the problems simply “cannot be solved” within the existing legal framework.⁵⁴

B. Proposals for New Legislation – The Third Energy Package

The proposed legislative response was the Third Energy Package first formally presented in September of 2007 and, following various amendments, approved by the European Parliament on first reading in 2008 and approved by the European Council on January 12, 2009 with final approval by the European Parliament on a second reading expected by May 2009.⁵⁵ The current drafts are those dated December 15, 2008. The package consists of five components, addressing both the substantive rules governing electricity and gas networks as well as new rules enhancing the powers and responsibilities of the Member States’ regulatory agencies.⁵⁶ In addition, the package includes the creation of a new “Agency for the Cooperation of Energy Regulators” with certain limited powers to resolve certain inter-State disputes and other matters.⁵⁷ The five components of the package are thus:

- draft Electricity Directive;⁵⁸
- draft Gas Directive;⁵⁹

51. The benchmarking reports from 2000 forward are available online at: http://ec.europa.eu/energy/gas_electricity/benchmarking_reports_en.htm (last visited March 6, 2009).

52. Commission Of The European Communities, Report From The Commission To The Council And The European Parliament: Progress in creating the internal gas and electricity market, SEC(2008) 460, (April 15, 2008) (COM(2008) 192 final) at 2.

53. *Id.*

54. *Id.* at 9.

55. Council Adoption Release, *supra*, note 49.

56. *Id.*

57. *Id.*

58. Common Position Adopted by the Council with a view to the adoption of a Directive of the European Parliament and of the Council concerning Common Rules for the Internal Market in Electricity and repealing Directive 2003/54/EC, (14539/08) (Dec. 15, 2008) (hereinafter Electric Directive), <http://register.consilium.europa.eu/pdf/en108/st14/st14539.en08.pdf>; *see also* Council Adoption Release, *supra*, note 49. Note while the new documents technically “repeal” the corresponding document from the Second Energy Package in 2003, the Council makes clear in the explanatory statement of reasons this is being done for clarity and that in practical effect the new Directives and Regulations are building on the earlier documents, not repudiating them.

- draft Electricity Regulation;⁶⁰
- draft Gas Regulation;⁶¹ and
- draft Regulatory Authorities Regulation.⁶²

The Electricity and Gas Regulations (and the Directives)⁶³ begin by seconding the conclusion voiced in the earlier benchmarking report that non-discriminatory network access and effective regulatory supervision simply “do not yet exist” in each of the Member States.⁶⁴ The principal objectives of the new package is to achieve expansions in functional and corporate unbundling, market transparency, Transmission System Operator coordination and cooperation, adequacy and consistency of national regulatory authorities as well as enhanced independence and the creation of an EU Regulatory Agency with specific and limited—albeit important—authorities.⁶⁵

1. Unbundling Integrated Energy Companies.

To advance these objectives, the documents propose major changes, many of which echo regulatory principles implemented by the Federal Energy

59. Common position adopted by the Council with a view to the adoption of a Directive of the European Parliament and of the Council concerning Common Rules for the Internal Market in Natural Gas and repealing Directive 2003/55/EC, (14540/08) (Dec. 15, 2008) (hereinafter Natural Gas Directive).

60. Common Position Adopted by the Council with a view to the adoption of a Regulation of the European Parliament and of the Council on Conditions for Access to the Network for Cross-border Exch. in Elec. and repealing Regulation (EC) No 1228/2003 (14546/08) (Dec. 15, 2008) (hereinafter Draft Elec. Regulation).

61. Common Position Adopted by the Council with a view to the adoption of a Regulation of the European Parliament and of the Council on Conditions for Access to the Natural Gas Transmission Networks and repealing Regulation (EC) No 1775/2005 (14548/08) (Dec. 15, 2008) (hereinafter Draft Gas Regulation).

62. Common Position adopted by the Council with a view to the adoption of a Regulation of the European Parliament and of the Council establishing an Agency for the Cooperation of Energy Regulators (14541/08) (Dec. 15, 2008) (hereinafter Regulatory Authorities Regulation).

63. The distinction between a “regulation” and a “directive” in the context of EU law derives directly from the terms of the founding Treaty of Rome. In what is now re-numbered Article 249, a “regulation” is stated to be “binding in its entirety” and is “directly applicable [in] all Member States”, without the need for further legal action by the individual Member States. Consolidated Version Of The Treaty Establishing The European Cmty., Official J. C 321 E, 29/12/2006, at P. 153, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:12006E249:EN:HTML> (last visited March 6, 2009). In contrast, “directive” is binding only “as to the result to be achieved” but leaves to the national authorities the choice of the “form and method” by which the result is achieved—a process termed “transposition” of the Directive into binding national law. *Id.* Hence a Regulation derives its legally binding character from the EU itself, whereas the terms of a Directive become binding by virtue of the national law of the Member State except insofar as judicial action may be instituted in the European court system against a national government for failure to act properly to transpose an EU Directive.

64. As the Draft Elec. Regulation states, at Introductory Paragraph 2: “[A]t present, there are obstacles to the sale of electricity on equal terms, without discrimination or disadvantage in the Community. In particular, non-discriminatory network access and an equally effective level of regulatory supervision do not yet exist in each Member State.” *supra*, note 60. While the tone of the Gas Regulation is more positive overall, the identical blunt conclusion is applied to the gas network as well. Draft Gas Regulation, *supra* note 61, at Introductory Paragraph 11. Essentially identical language is also included in both of the draft Directives as well (at Introductory Paragraph 4 of each draft Directive). *supra* notes 58-59.

65. See, e.g., *supra* notes 58 to 62; “No Competition in Europe’s Retail”—European Regulators Group for Electricity and Gas 2008 Status Report, PLATTS INT’L GAS REP. 615 at 19 (Jan. 19, 2009); LIBERALIZING THE EU ENERGY SECTOR, EURACTIV.COM (2009), <http://www.euractiv.com/en/energy/liberalising-eu-energy-sector/article-145320>.

Regulatory Commission (FERC) in its multiple orders in the United States over the last twenty years. Hence, the EU framework applies many of the general principles of unbundling, non-discriminatory access and rates, non-preferential access to information or assets and the like that are common to energy regulatory practice in the United States. Issues dealing with capacity release and reallocation and prohibitions of the improper use of competitively sensitive information are also addressed. The U.S. practitioner should be cautioned, however, that the EU approach may differ significantly in the details of implementation. For example, Article 22 of the draft Gas Regulation explicitly provides that “each transmission, storage and LNG system operator shall take reasonable steps to allow capacity rights to be freely tradeable and to facilitate such trade”⁶⁶ and must develop procedures on the primary market “to facilitate secondary trade of capacity and shall recognize the transfer of primary capacity rights where notified by system users.”⁶⁷ Article 16 Section 3(b) further guarantees the rights of shippers to trade capacity rights freely in the secondary market, stating that “network users who wish to re-sell or sublet their unused contracted capacity on the secondary market shall be entitled to do so,”⁶⁸ apparently subject only to “notification or information of the transmission system operator by network users.”⁶⁹ Hence there is no indication here that the EU is considering imposing a “Shipper Must Have Title” rule or policy similar to that imposed by the FERC to prohibit the direct resale of capacity rights in an independent secondary market.⁷⁰ The EU rules also differ significantly with regard to allowing for waivers or exceptions (generally termed “derogations” in EU parlance).

In broad outline, however, the new rules move to require further unbundling of production and supply from the gas and electricity transmission networks and enhance the powers of the national regulators to enforce the new non-discriminatory access rules. The most controversial issue addressed in the new legislation deliberations was whether to require full “ownership unbundling.” As proposed by the European Commission, no company that owns a transmission network may also control an electric or natural gas supply undertaking (i.e. generation or marketing) unless an Independent System Operator (ISO) is designated to operate (both technically and commercially) that system.⁷¹ In its consideration of the proposed legislation during the summer of

66. Draft Gas Regulation, *supra* note 61, at 43.

67. *Id.*

68. *Id.* at 36

69. *Id.*

70. Electricity capacity rights are also required to be freely tradable on a secondary basis, at least on some interconnections. Draft Elec. Regulation, *supra* note 60, at Annex I (“Guidelines on the management and allocation of available transfer capacity of interconnections between national systems”) at § 2.12 (“Capacity shall be freely tradable on a secondary basis, provided that the TSO is informed sufficiently in advance. Where a TSO refuses any secondary trade (transaction), this must be clearly and transparently communicated and explained to all the market participants by that TSO and notified to the regulatory authority”). *Id.* at Art. 17, § 4 (stating that congestion management rules “shall include” the obligation to offer unused capacity on the market and users of the facility “shall be” entitled to trade their contracted capacities on the secondary market).

71. See, e.g., *supra* notes 58 & 59; Liberalizing the EU Energy Sector, EURACTIV.COM, Oct. 23, 2008, <http://www.euractiv.com/en/energy/liberalizing-eu-energy-sector/article-145320>. This “final package” adopted by the Council, it should be noted, must now return to Parliament for a “second reading” and adoption before it becomes effective, which is expected to occur by late April 2009. For further detail see *EU Ministers reach*

2008, the European Parliament ultimately rejected the ISO approach as too costly, but added the option of continued integrated company ownership of natural gas transmission only but under substantially enhanced regulatory oversight and control. In the final package, the European Council (direct representatives of the EU national governments) has proposed offering all three options for electric transmission (i.e. unbundling, ISO or ITO), and unbundling or expanded regulation (ITO) for natural gas transmission. Hence under the final draft there is the so-called “ITO” option, under which independent transmission network operators would be established with a view to effective unbundling.⁷² Under this option, a company would be able to retain ownership of a transmission network on the condition that the network be operated by an independent transmission network operator, together with certain additional assurances of fair competition.⁷³ It is anticipated that this third option could apply to both electricity and gas in those Member States where as of the effective date of the new directives, the transmission network is owned by a vertically integrated company.

An illustration of the complexities faced by European Energy Regulators is the presence of a reciprocity clause involving transmission systems that are controlled by persons from a third country or countries. Article 11, Section 3(a) of each of the Directives requires the Regulator of a Member State to refuse certification in such a case if it has not been demonstrated that the entity complies with the requirements of Article 9 (governing unbundling).⁷⁴ Under Section 3(b) of Article 11, certification shall also be denied if it has not been demonstrated to the Regulator that granting certification will not put “at risk the security of energy supply of the Member State and the [European] Community.”⁷⁵ This clause has been dubbed the “Gazprom” clause, reflecting European concerns over the potential role of the Russian energy company.⁷⁶ Concerns over security of European natural gas supplied from Russia are likely to be particularly pronounced over the next several years due to the effective curtailment of gas supplies during the winter of 2008-2009 stemming from the dispute between Russia and Ukraine.⁷⁷

agreement on unbundling compromise, PLATTS EU ENERGY 193 at 1 (October 17, 2008); *Companies to keep Grids: Council*, PLATTS EU ENERGY 185 at 1 (June 13, 2008); *MEPs Confirm Rejection of Third Way Unbundling Option for Gas*, PLATTS EU ENERGY 185 at 4 (June 13, 2008); *MEPs Beef Up EU Energy Regulatory Agency*, PLATTS EU ENERGY 184 at 1 (May 30, 2008); *Unbundling for Power Wins Out as MEPs Reject “Third Way,” ISO*, PLATTS EU ENERGY 183 at 1 (May 16, 2008); *Italy’s Enel unbundles*, PLATTS EU ENERGY 183 at 9 (May 16, 2008).

72. See generally, summary of the new package in the lengthy press release summarizing actions taken at the October 2008 meetings. Press Release, Council of the European Union, 13649/08 (Presse 276) (summarizing actions at the 2895th Council meeting, Transp., Telecomm. and Energy (2008) (<http://register.consilium.europa.eu/pdf/en/08/st13/st13649.en08.pdf>).

73. Electric Directive, *supra* note 58; Natural Gas Directive, *supra* note 59.

74. *Id.*

75. *Id.*

76. LIBERALIZING THE EU ENERGY SECTOR, *supra* note 65.

77. Jacob Gronholt-Pedersen, *Russian Gas Reaches Europe, Ending Disp.*, WALL ST. J., Jan. 21, 2009.

2. Enhanced Powers for Regulators and the foundation of the Agency for the Cooperation of Energy Regulators.

The Third Energy Package also enhances the powers—and the independence—of the various national regulatory authorities. They are required to be functionally independent from other public or private entities, are given enhanced authority and sanctioning power over T & D System Operators, with the authority to review and in some instances require modifications in TSO transmission expansion plans and grid codes, and are given extended market competition monitoring and enforcement powers. Similar to the provisions of Section 402(e) of the Department of Energy Organization Act of 1977 that ensure the independence of the FERC from supervision by an official or employee of the Department of Energy,⁷⁸ the Gas and Electricity Directives specify the Member States must ensure that the regulator “do[es] not seek or take direct instructions from any government or other public or private entity when carrying out the regulatory tasks.”⁷⁹

The Regulatory Authorities Regulation provides for an enhanced role for the regulatory authorities and in addition seeks to address the inter-State regulatory issues that arise from the absence of a homologue to FERC. Rather than create a new supra-national European energy regulator, however, this regulation proposes to enhance cooperation between and among the State regulatory bodies by creating a new “Agency for the Cooperation of Energy Regulators” (ACER). The regulation recalled the earlier formation of the advisory group on electricity and gas, called the European Regulators Group for Electricity and Gas (ERGEG) (established in 2003)⁸⁰ whose responsibility was to “facilitate consultation, coordination and cooperation between the regulatory bodies in Member States, and between those bodies and the Commission, with a view to consolidating the internal market in electricity and natural gas.”⁸¹ While praising the ERGEG effort, the Regulatory Authorities Regulation concludes that it is “widely recognized. . . that voluntary cooperation between national regulatory authorities should now take place within a Community structure with clear competences and with the power to adopt individual regulatory decisions in a number of specific cases.”⁸² In particular, the new ACER is directed to decide on the terms and conditions for access to and operational security of electricity and gas infrastructure connecting or that might connect at least two Member States (“cross-border infrastructure”).⁸³ The ACER is empowered to grant exemptions from the mandatory access rules for certain new interconnectors between Member States. It remains to be seen how strong a role the new ACER

78. 42 U.S.C. 7171(d) provides that: “In the performance of their functions, the members, employees, or other personnel of the Commission shall not be responsible to or subject to the supervision or direction of any officer, employee, or agent of any other part of the Department.”

79. Electric Directive, *supra* note 58, at Art. 34, § 4(a); Natural Gas Directive, *supra* note 59, at Art. 38, § 4(a).

80. Regulatory Authorities Regulation, *supra* note 62, at P. 2. ERGEG was composed of representatives of the national regulatory authorities.

81. *Id.*

82. *Id.* at P.3.

83. Regulatory Authorities Regulation, *supra* note 62, at Art. 7, § 7.

may play as the legal framework would appear to allow considerable room for the powers and role to evolve in coming years.⁸⁴

3. Transmission Operators.

Additional provisions of the third package reinforce transparency of market operation to assist participants, and also require record keeping and availability of regulators to aid in enforcing anti-discrimination and open-access requirements.⁸⁵ Two new organizations—one for gas and one for electricity—are proposed in which Transmission System Operators (TSOs) will be members and which will facilitate their coordination and cooperation.⁸⁶ These new organizations are called the European Network of Transmission System Operations for Electricity (ENTSO-E) and the European Network of Transmission System Operations for Gas (ENTSO-G), both of which are in the early stages of organization.⁸⁷ Their major functions are to include achieving full coordination of transmission system operation, coordinated investment and expansion planning and certain research activities.

C. Defining a European Energy Policy – Including the Role of Renewable Energy, Expanded Energy Efficiency & Carbon Emission Reduction

Parallel and linked to its efforts at improved internal, competitive energy markets, the EU has been working to define its Policy on Renewable Energy, expanded Energy Efficiency and Carbon Emission Reduction.⁸⁸ In a March 2007 Summit, EU Heads of State endorsed a European Commission proposal to develop a new European Energy Policy addressing these matters, including the establishment of objectives for a twenty percent reduction in European energy use from enhanced energy efficiency by 2020, a twenty percent reduction in GHG from 1990 levels also by 2020 (thirty percent if an international agreement on GHG reduction at comparable levels is reached by 2012) and production of twenty percent of electricity from renewable sources by that date. The strategic objective was to limit global average temperature increases to not more than 2°C above pre-industrial levels. In January 2008, the European Commission proposed its “Climate and Energy Package” of legislative proposals to establish the legal framework for pursuing these objectives.⁸⁹ In November, it proposed an EU Energy Security and Solidarity Action Plan in part to suggest means of

84. *Id.* at Art. 9, § 1. *See also*, Natural Gas Directive, *supra* note 59, at Art. 35 (allowing for exemptions for a limited period of time for “major new gas infrastructure”).

85. Regulatory Authorities Regulation, *supra* note 62.

86. *Id.*

87. *Id.*

88. Pre-2008 EU Legislation was Directive 2001/77/EC (i.e. Directive on the Promotion of Electricity produced from Renewable Energy Sources), which required Member States to establish quantitative national targets for producing renewable energy, permitted national “support schemes” to incent development of renewable energy sources and guaranteed access of renewable generation to electric transmission and distribution networks.

89. CITIZENS’ SUMMARY, EU CLIMATE & ENERGY PACKAGE (2008), http://ec.europa.eu/climateaction/docs/climate-energy_summary_en.pdf.

implementing these objectives, having previously proposed a Renewable Energy Roadmap (i.e. in October 2007).⁹⁰

After broad agreement was reached on these proposals within the Council, the European Parliament adopted them in a plenary vote on December 17, 2008. With respect to renewable energy, each Member State is given an objective target based on a 5.5% increase in its existing renewable share and its per capita gross domestic product which, if met, will be sufficient to increase EU employment of renewable sources from the existing 8.5% to twenty percent by 2020.⁹¹ Each country is free to decide upon its own mix of renewable projects in order to meet its target, but is required to present the Commission with a National Action Plan by June 30, 2010 and progress reports every two years thereafter showing how the national objective will be achieved.⁹² Renewable energy investments in non-EU countries cannot be used to satisfy a nation's objective unless the energy produced by the project is physically imported into the EU.⁹³ However, one EU Member State is permitted to trade excess Renewable Credits (i.e. renewable production in excess of that needed to reach its objective) to another.⁹⁴ Member states are further requested to provide priority or even guaranteed access to the electric transmission grid to renewable projects.⁹⁵

The coming year—2009— will be a year devoted to implementation and to the effort to obtain an international agreement on GHG emission reduction at Copenhagen in the Fall.

90. See, e.g., Communication from the Commission to the European Parliament, the Council, the European Econ. and Social Comm. and the Comm. of the Regions, An EU Energy Sec. and Solidarity Action Plan, COM (2008) 781 (hereinafter Economic and Social Communication); Proposal for a Directive of the European Parliament and of the Council on the Promotion of the use of Energy from Renewable Sources, COM (2008) 19 (hereinafter Renewable Energy Directive); Comm. from the Commission to the Council and the European Parliament, Renewable Energy Road Map—Renewable Energies in the 21st Century, COM (2006) 848; *Energy and Climate Change: Toward an Integrated EU Policy*, EURACTIV.COM, Feb. 2, 2009, <http://www.euractiv.com/en/energy/energy-climate-change-integrated-eu-policy/article-160957>; *EU makes Bold Climate and Renewables Commitment*, EURACTIV.COM, June 29, 2007, <http://www.euractiv.com/en/energy/eu-bold-climate-renewables-commitment/article-162373>; *European Parliament votes in favor of 2020 Climate Package*, PLATTS EU ENERGY 199 (Jan. 16, 2009); *Energy Security, Copenhagen Climate talks head EU Agenda in 2009*, PLATTS EU ENERGY 199 at 7 (Jan. 16, 2009). Additional objectives adopted in March 2007 related to bio-fuels, the transportation sector and other matters. In addition to promoting renewable energy production and energy efficiency, the proposed legislation established a legal framework for implementing a GHG Emission Allowance Trading System to follow that now in effect under Kyoto and CO2 capture and storage. The proposed Action Plan suggested substantial expansion of the EU's transmission system to facilitate development of off-shore wind, the importation of wind and solar produced electricity from North Africa, natural gas pipelines to the Caspian and Middle East, LNG facilities and similar infrastructure expansion.

91. Economic and Social Communication, *supra* note 90; Renewable Energy Directive, *supra* note 90.

92. *Id.*

93. *Id.*

94. *Id.*

95. *Id.*; *Interview: EU Legislation set to boost Wind Industry*, EURACTIV.COM, Jan. 21, 2009, <http://www.euractiv.com/en/energy/interview-eu-legislation-set-boost-wind-industry/article-178689>; *EU Urged to Reconsider Strategic Energy Goals*, EURACTIV.COM, Jan. 22, 2009, <http://www.euractiv.com/en/energy/eu-urged-reconsider-strategic-energy-goals/article-178733>.

III. THIRD WORLD ENERGY SYSTEM AND MARKET DEVELOPMENT

U.S. companies and professionals also assisted in the development of power and natural gas infrastructure in Africa, Asia, and Latin America over the past several years to expand access to modern energy services. In assessing the future challenge of providing adequate and reasonable cost energy supply, the significance of Third World energy demand and development should not be under-appreciated. In its 2008 World Energy Outlook, the International Energy Agency (IEA) projects that World primary energy demand will grow by 1.6% per year from 2006 to 2030, i.e. an increase of forty-five percent.⁹⁶ Eighty-seven percent of this increase is projected to come from non-OECD (i.e. non-developed) countries in the Third World. Required investment in energy producing infrastructure to meet projected world demand is estimated at roughly one trillion dollars per year, or twenty-six trillion dollars (in 2007 dollars) without considering the possible need for climate change related investments.⁹⁷ Again, approximately eighty-seven percent of this investment is needed in Third World countries. Almost exactly one-half of this investment is required in the power sector. As noted below, access rates of the population in the Third World to modern energy services (i.e. electricity or pipeline delivered natural gas) can be as little as twenty percent and in several non-OECD regions (Africa and South Asia) does not exceed sixty percent.⁹⁸ The IEA estimates that the total unserved population equals approximately 1.6 billion, and that, absent strong efforts and programs to reduce this number, it will decline only by about ten percent over the next twenty years.⁹⁹

Perhaps the best illustration of these conditions and recent efforts to mitigate them can be found in Sub-Saharan Africa where rural access rates for modern energy services can be as low as eight percent, and the Region-wide access rate is only twenty-six percent.¹⁰⁰ Over the past decade, major efforts have been expended by Donor Agencies (i.e. World Bank, African Development Bank, USAID, etc.) to assist in increasing these rates and to reduce poverty through economic growth. This has included development and funding of major electrification programs, planning for large infrastructure development programs (both generation and transmission), and actual infrastructure financing and construction. Regional Power Pools and transmission interconnections are being

96. INTERNATIONAL ENERGY AGENCY (IEA), WORLD ENERGY OUTLOOK EXECUTIVE SUMMARY (2008) <http://www.iea.org/Textbase/npsum/WEO2008SUM.pdf>.

97. *Id.*

98. Data provided is for 2006. Modern energy service access in rural areas are but eight percent in Sub-Saharan Africa. In South Asia, this access rate is but 51.8%, but approximates ninety percent in China and Latin America. IEA, 2006, WORLD ENERGY OUTLOOK, 37-41, 77, 567 (2006).

99. *Id.*

100. *Id.* Substantial efforts at rural electrification throughout the World are in process. *See, e.g.*, INTERNATIONAL DEV. ASS'N (IDA), PROGRAM DOCUMENT FOR A UGANDA POWER SECTOR DEVELOPMENT OPERATION, (2007), <http://web.worldbank.org/external/projects/main?Projectid=P069208&theSitePK=40941&pagePK=64283627&menuPK=228424&piPK=73230>; IDA, PROJECT APPRAISAL DOCUMENT FOR SECOND ELECTRICITY ACCESS RURAL EXPANSION PROJECT (2007), <http://web.worldbank.org/external/projects/main?menuPK=228424&pagePK=64283627&piPK=73230&theSitePK=40941&Projectid=P101556>; Emma Amaize, *Electricity for 1,509 Towns in Delta*, GLOBAL NEWS WIRE-FINANCIAL TIMES LTD., Dec. 30, 2008; Kae Matundu-Tjiparuo, *MORE THAN \$210N SPENT ON RURAL ELECTRIFICATION*, GLOBAL NEWS WIRE-FINANCIAL TIMES LTD., Aug. 12, 2008; *Rural electrification Costs over 50 million dollars a year*, Global News Wire - Financial Times (12/27/07)(Mozambique).

developed throughout Sub-Saharan Africa with the financing and technical assistance of such Agencies, and where the economic development prospects suggest that such infrastructure can be supported by the local economy.¹⁰¹ The demand and economics to support the capital infrastructure needed to supply these modern energy services is, at present, in large measure coming from expanding mining and related industries seeking to exploit Africa's large mineral resources.

At the beginning of this process, and even today, many of Africa's national electric systems were quite small (consisting of hundreds to a few thousand MW), are not interconnected with the systems of surrounding countries and operate on the basis of isolated hydro-electric capacity or, where this is absent, small diesel generation plants whose produced electricity has cost well over twenty cents a kW/h in recent periods of high oil prices. Donor Agency project development has focused on hydro-electric facility development where this resource is available, natural gas generation development where supplies of natural gas are available, geothermal project development in East Africa where one of the world's largest resources for this energy is available (estimated at thousands of MW) and distributed generation (sun and wind) where expansion of the grid is economically infeasible to reach significant populations at this time.¹⁰²

Power Pool's are recognized as necessary to stabilize African energy supplies as electric generation, natural gas and oil resources are unevenly distributed over the Continent. Hydro-electric power exists in abundance in Africa, but over fifty percent is located in Central Africa with two-thirds of that located in one country—the Democratic Republic of the Congo. Indeed, a single site on the Congo River near its discharge into the Atlantic—Inga Falls—is believed capable of development into 40,000 MW of hydro-electric capacity.¹⁰³

101. Sub-Saharan Africa is developing four major power pools: South African Power Pool (twelve countries, 230 million population, 52,743MW—over 42,000 MW of which serves industrialized South Africa); West African Power Pool (fifteen countries, 243 million population, 6,830 MW), East African Power Pool (potentially eleven countries, 310 million population, approximately 8,000 MW), and Central African Power Pool (eleven countries, 113 million population, 4,793 MW). Organization of the first of these Pools (SAPP) began in the mid-1990s, with the remainder organized primarily in the past decade and with development support continuing. MW figures represent the existing generation within the Power Pool Region.

102. IDA, PROJECT APPRAISAL DOCUMENT FOR PARTIAL RISK GUARANTEE & LOAN TO BUJAGALI ENERGY LTD. FOR A PRIVATE POWER GENERATION PROJECT IN UGANDA (2007), <http://siteresources.worldbank.org/EXTINSPECTIONPANEL/Resources/UgandaeligibrepoMay3FINAL.pdf>; IDA, CAMEROON PROJECT INFORMATION DOCUMENT FOR ENERGY SECTOR DEVELOPMENT (June 4, 2008); IDA, Emergency Multi-Sector Rehabilitation and Reconstruction Project (Democratic Republic of the Congo) (2008), <http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=349466&menuPK=349498&Projectid=P057296>; IDA, PROJECT APPRAISAL DOCUMENT FOR AN ETHIOPIA/NILE BASIN INITIATIVE POWER EXPORT PROJECT: ETHIOPIA-SUDAN INTERCONNECTOR (2007), <http://web.worldbank.org/external/projects/main?menuPK=228424&pagePK=64283627&piPK=73230&theSitePK=40941&Projectid=P074011>; IDA, PROJECT APPR. DOCUMENT FOR SOUTHERN AFRICAN POWER MARKET (2003), http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/06/27/000020439_20070627112953/Rendered/PDF/39788.pdf; 90,000 Rural dwellers to have access to Solar Power, Global News Wire – Financial Times (10/23/08); *Wind Energy Study Launched*, GLOBAL NEWS WIRE—FINANCIAL TIMES LTD., Feb. 7, 2008.

103. IDA, PROJECT APPRAISAL DOCUMENT ON A PROPOSED GRANT IN SUPPORT OF THE SOUTHERN AFRICA POWER MARKET PROGRAM (2007), http://wwwwds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/05/10/000020953_20070510095044/Rendered/PDF/39645.pdf; UNITED NATIONS, RENEWABLE ENERGY DEV. IN AFRICA: PROSPECTS & LIMITS (2003), <http://www.un.org/esa/sustdev/sdissues/energy/op/nepadkarekezi>.

Feasibility studies, environmental impact studies and early financing meetings directed at the gradual development of this resource, if it can be developed in an environmentally responsible manner, were held this past year. The estimated cost of its full development is forty billion dollars, with an additional forty billion dollars planned to be spent to develop transmission to wheel the low-cost power (anticipated cost is 1.5 to 2.1 cents a kwh) to South Africa, Egypt, and Nigeria. Projected in service dates are in the early 2020s, with some suggesting that sufficient energy will be produced to permit export to Europe. Meanwhile, smaller hydro resources (of which Central Africa has 100,000 MW in addition to Inga) are now being developed, and a program to interconnect the isolated national electric grids of the region's countries is being pursued.¹⁰⁴ West Africa has both hydro and natural gas generation resources (the natural gas resource is located primarily in Nigeria and neighboring country off-shore regions), and its regional electric grid is divided into several parts. A program to develop these resources, develop natural gas distribution systems within Nigeria and to interconnect the separate national grids (already partially accomplished) is now being pursued.¹⁰⁵ Factional conflict in certain of the region's major countries (particularly Nigeria) delays this program. Similar development efforts are occurring in East Africa (primarily hydro and geothermal generation resources with some recently discovered natural gas), while South Africa focuses upon limited hydro development but significant natural gas and coal resources. Three thousand MW of traditional coal generation is presently under development.¹⁰⁶

With the exception of the SAPP, which has implemented a short-term spot electricity market and has developed but not yet implemented a day-ahead energy market,¹⁰⁷ African Power Pool efforts have been directed at generation and transmission interconnection development to overcome region-wide supply shortages and high costs where only diesel and petroleum generation is

104. Permanent Secretary Bruno Kapandji Kalala, Central African Power Pool, "CAPP Today, Challenges and Prospects", Presentation at the Leon H. Sullivan VIII Summit (2008)(hereafter Central African Power Pool); *Insight-Grand Inga comes One Step Closer*, WATER POWER & DAM CONSTR., June 27, 2008, at 10; *Hydropower-Grand Inga-Progress at Last?*, MODERN POWER SYS., June 6, 2008, at 16. Continuing political instability and factional conflict within DRC may well delay the project as it has in the past.

105. CENTER FOR ENERGY ECON., BUREAU OF ECON. GEOLOGY, JACKSON SCHOOL OF GEOSCIENCES, UNIV. OF TEXAS, GAS MONETIZATION IN NIGERIA (2006), http://www.beg.utexas.edu/energyecon/new-era/case_studies/Gas_Monetization_in_Nigeria.pdf.; IDA, PROJECT APPRAISAL DOCUMENT ON A PROPOSED CREDIT IN SUPPORT OF THE FIRST PHASE OF THE US \$100 MILLION CIASAL TRANSMISSION BACKBONE PROJECT OF THE WEST AFRICA POWER POOL (2005), http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2006/06/16/000160016_20060616100928/Rendered/PDF/36361.pdf; IDA, PROJECT APPRAISAL DOCUMENT ON A PROPOSED IDA PARTIAL RISK GUARANTEE FOR THE WEST AFRICAN GAS PIPELINE PROJECT (2004), http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2004/11/09/000090341_20041109105344/Rendered/PDF/303350AFR.pdf.

106. Secretary General Amadou Diallo, West African Power Pool, "The Case of the West African Power Pool", Presentation at the Leon H. Sullivan VIII Summit (2008) (hereafter West African Power Pool); SOUTHERN AFRICAN POWER POOL, 2007 ANNUAL REP. (2008), <http://www.sapp.co.zw/docs/sapp2007.pdf>; Presentation of the Eastern Africa Power Pool to USAID (June 2008); James Mwambazi, *Congo DR and Zambia Plan Regional Power Expansion Project*, PLATT'S COAL WEEK INT'L 895, Nov. 17, 2008; Chamwe Kaira, *Massive Coal-Fired Plant for Walvis Bay*, GLOBAL NEWS WIRE-FINANCIAL TIMES LTD., June 20, 2008; Patrick Ugeh, *WAPP Targets \$16 BN for Regional Power Pool*, GLOBAL NEWS WIRE-FINANCIAL TIMES LTD., Oct. 23, 2007; Brian Benza, *Government Moves Ahead with Power Project*, GLOBAL NEWS WIRE-FINANCIAL TIMES LTD., Oct. 31, 2007.

107. SOUTHERN AFRICAN POWER POOL, 2007 ANNUAL REP., *supra* note 106.

available. However, Regional framework laws or agreements, including transparent governance processes that allow for the participation of independent generation (i.e. non-state or grid operator owned) and technical codes necessary for organized market operation have or are being developed in each region to encourage both intra and inter regional trade. Also, in Western Africa, in addition to the Power Pool System Operator, a Regional Regulator has been established to oversee and encourage regional market development, and national Regulators are being developed in many countries.¹⁰⁸

U.S. companies and professionals have assisted in this development work, providing technical guidance and project development/construction services over the past decade. Major projects upon which U.S. companies have been or are planned to be involved include the Lake Kivu natural gas development project; Bujagali hydro-electric dam; electrification, power pool development throughout Sub-Saharan Africa; transmission and generation infrastructure in Cameroon whose electric system is operated under a long-term contract by AES Corporation; natural gas liquefaction and pipeline transmission systems in West Africa and Angola; and geothermal project development in Ethiopia and Kenya.¹⁰⁹

108. West African Power Pool at 3, 10-15 *supra* note 106; Central African Power Pool at 6, 9-13 *supra* note 104.

109. *See, e.g., Ormat Technologies, Inc. signs a \$105 million long-term senior debt financing for Olkaria III Geothermal Power Project in Kenya*, RES. WEEK, Jan. 25, 2009; *AES Founds Africa Power Co.*, AFRICA ENERGY INTELLIGENCE, Oct. 1, 2008; *Elias Biryabarema, Bujagali Hydro Power Project on Schedule*, THE MONITOR, Sept. 15, 2008; *Insight—CDC backs Cameroon Hydropower Projects*, WATER POWER & DAM CONSTR., Mar. 31, 2008; *US Company set for Methane Gas Extraction on Lake Kivu*, THE NEW TIMES, Jan. 18, 2008; *CIC Energy's Lawyer*, AFRICA ENERGY INTELLIGENCE, July 25, 2007.

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