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|  | **FORM EIA-411**  **COORDINATED BULK POWER SUPPLY AND DEMAND PROGRAM REPORT** | **OMB No. 1905-0129**  **Approval Expires: xx/xx/xxxx**  **Burden: 122 hours** |
| **NOTICE:** This report is **mandatory** under the Federal Energy Administration Act of 1974 (Public Law 93-275) for all parts. Failure to comply may result in criminal fines, civil penalties and other sanctions as provided by law. For further information concerning sanctions and data protections see the provision on sanctions and the provision concerning the confidentiality of information in the instructions. **Title 18 USC 1001 makes it a criminal offense for any person knowingly and willingly to make to any Agency or Department of the United States any false, fictitious, or fraudulent statements as to any matter within its jurisdiction.** | | |

**SCHEDULE 1. IDENTIFICATION**

First Name:

**Survey Contact**

Last Name:

Title: Telephone (include extension):

Email:

Fax:

**Supervisor of Contact Person for Survey**

First Name:

Title: Telephone (include extension):

Email:

Last Name:

Fax:

**Report For**

Regional Entity:

Reporting Party (Regional Entity or subregion):

For questions about the data requested on Form EIA-411, contact the Survey Manager:

Tim Shear

Telephone Number: (202) 586-0403

FAX Number: (202) 287-1938

Email: [Tim.Shear @eia.gov](mailto:Jonathan.DeVilbiss@eia.gov)

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|  | **FORM EIA-411**  **COORDINATED BULK POWER SUPPLY AND DEMAND PROGRAM REPORT** | **OMB No. 1905-0129**  **Approval Expires: xx/xx/xxxx**  **Burden: 122 hours** |
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| **SCHEDULE 2. PART A. HISTORICAL AND PROJECTED PEAK DEMAND AND ENERGY - MONTHLY** | | | | | | | | | | | | | | | | | | | | |
| **Peak Demand Reported:** | | | | | | | **Coincident \_\_\_\_\_\_\_\_\_\_ Non-Coincident \_\_\_\_\_\_\_\_\_** | | | | | | | | | | | | | |
| **If non-coincident, please explain why coincident is not used.** | | | | | | |  | | | | | | | | | | | | | |
|  | | | **YEAR** | | | | | | | | | | | | | | | | | |
| **2016 (Actual - Prior Year)** | | | | | | **2017 (RY - Report Year)** | | | | | | | **2018 (Next Year)** | | | | |
| **LINE NO.** | | **MONTH** | **PEAK HOUR**  **DEMAND (MEGAWATTS) (a)** | | **NET ENERGY (THOUSANDS OF MEGA-WATTHOURS) (b)** | | | | **PEAK HOUR**  **DEMAND (MEGAWATTS) (a)** | | | **NET ENERGY (THOUSANDS OF MEGA-WATTHOURS) (b)** | | | | **PEAK HOUR**  **DEMAND (MEGAWATTS) (a)** | | | **NET ENERGY (THOUSANDS OF MEGAWATTHOURS) (b)** | |
| **1** | | **January** |  | |  | | | |  | | |  | | | |  | | |  | |
| **2** | | **February** |  | |  | | | |  | | |  | | | |  | | |  | |
| **3** | | **March** |  | |  | | | |  | | |  | | | |  | | |  | |
| **4** | | **April** |  | |  | | | |  | | |  | | | |  | | |  | |
| **5** | | **May** |  | |  | | | |  | | |  | | | |  | | |  | |
| **6** | | **June** |  | |  | | | |  | | |  | | | |  | | |  | |
| **7** | | **July** |  | |  | | | |  | | |  | | | |  | | |  | |
| **8** | | **August** |  | |  | | | |  | | |  | | | |  | | |  | |
| **9** | | **September** |  | |  | | | |  | | |  | | | |  | | |  | |
| **10** | | **October** |  | |  | | | |  | | |  | | | |  | | |  | |
| **11** | | **November** |  | |  | | | |  | | |  | | | |  | | |  | |
| **12** | | **December** |  | |  | | | |  | | |  | | | |  | | |  | |
|  | |  |  | |  | | | |  | | |  | | | |  | | |  | |
| **SCHEDULE 2. PART B. HISTORICAL AND PROJECTED PEAK DEMAND AND ENERGY – ANNUAL** | | | | | | | | | | | | | | | | | | | | |
|  | | | | **YEAR** | | | | | | | | | | | | | | | | |
|  |  | | | **Actual** | | **Year 1** | | **Year 2** | | **Year 3** | **…** | | **….** | **….** | **….** | | **Year 8** | **Year 9** | | **Year 10** |
| **1** | **Summer Peak Hour**  **Demand (Megawatts)**  June-September | | |  | |  | |  | |  |  | |  |  |  | |  |  | |  |
| **2** | **Winter Peak Hour**  **Demand (Megawatts)**  December - February | | |  | |  | |  | |  |  | |  |  |  | |  |  | |  |
| **3** | **Net Annual Energy (Gigawatt hours)** | | |  | |  | |  | |  |  | |  |  |  | |  |  | |  |

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|  | **FORM EIA-411**  **COORDINATED BULK POWER SUPPLY AND DEMAND PROGRAM REPORT** | **OMB No. 1905-0129**  **Approval Expires: xx/xx/xxxx**  **Burden: 122 hours** |
| Regional Entity: Reporting Party: | | |

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| **SCHEDULE 3. PART A. PROJECTED DEMAND AND CAPACITY - SUMMER** | | | | | | | |
| **LINE NO.** |  | **YEAR** | | | | | |
|  | **Year 1 (RY 2017)** | **Year 2 (2018)** | **….** | **Year 9 (2025)** | **Year 10 (2026)** |
| **DEMAND (IN MEGAWATTS)** | | | | | | | |
| **1** | **Unrestricted Peak Demand** |  |  |  |  |  |  |
| **1a** | **New Conservation (Energy Efficiency)** |  |  |  |  |  |  |
| **1b** | **Estimated Diversity** |  |  |  |  |  |  |
| **1c** | **Additions for non-member load** |  |  |  |  |  |  |
| **1d** | **Stand-by Load Under Contract** |  |  |  |  |  |  |
| **1e** | **Non-Controllable Demand Response** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **2** | **Total Internal Demand** |  |  |  |  |  |  |
| **2a** | **Direct Control Load**  **Management** |  |  |  |  |  |  |
| **2b** | **Interruptible Load** |  |  |  |  |  |  |
| **2c** | **Critical Peak Pricing with**  **Control** |  |  |  |  |  |  |
| **2d** | **Load as a Capacity Resource** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **3** | **Net Internal Demand** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **4** | **Total Demand Response** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **SUPPLY CATEGORIES (IN MEGAWATTS)** | | | | | | | |
| **5** | **TOTAL INTERNAL CAPACITY**  **(sum of 6 and 8a)** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **6** | **EXISTING CAPACITY (6a+6b+6c)** |  |  |  |  |  |  |
| **6a** | **Certain** |  |  |  |  |  |  |
| **6b** | **Other** |  |  |  |  |  |  |
| **6c** | **Unavailable** |  |  |  |  |  |  |
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| **SCHEDULE 3. PART A. PROJECTED DEMAND AND CAPACITY - SUMMER** | | | | | | | | | | | | | | | | |
| **LINE NO.** | | |  | | **YEAR** | | | | | | | | | | | |
| **)** | | **Year 1 (RY 2017)** | **Year 2 (2018)** | | **….** | | **Year 9 (2025)** | | **Year 10 (2026)** | | |
| **FUTURE CAPACITY CATEGORIES (IN MEGAWATTS)** | | | | | | | | | | | | | | | | |
| **7** | **FUTURE CAPACITY ADDITIONS** | | | |  | |  |  | | |  |  | | |  | |
| **7a** | **Tier 1 (Most Certain)** | | | |  | |  |  | | |  |  | | |  | |
| **7b** | **Tier 2** | | | |  | |  |  | | |  |  | | |  | |
| **7c** | **Tier 3 (Least Certain)** | | | |  | |  |  | | |  |  | | |  | |
|  |  | | | |  | |  |  | | |  |  | | |  | |
| **8** | **ANTICIPATED CAPACITY**  **(6a+7a)** | | | |  | |  |  | | |  |  | | |  | |
|  |  | | | |  | |  |  | | |  |  | | |  | |
| **CAPACITY TRANSFERS (IN MEGAWATTS)** | | | | | | | | | | | | | | | | |
| **9099999** | | **CAPACITY TRANSFERS – IMPORTS** | |  | |  | | |  | |  | |  | | |  |
|  | |  | |  | |  | | |  | |  | |  | | |  |
| **9a** | | **Firm** | |  | |  | | |  | |  | |  | | |  |
| **9b** | | **Expected** | |  | |  | | |  | |  | |  | | |  |
|  | |  | |  | |  | | |  | |  | |  | | |  |
| **1010** | | **CAPACITY TRANSFERS – EXPORTS** | |  | |  | | |  | |  | |  | | |  |
|  | |  | |  | |  | | |  | |  | |  | | |  |
| **10a** | | **Firm** | |  | |  | | |  | |  | |  | | |  |
| **10b** | | **Expected** | |  | |  | | |  | |  | |  | | |  |
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| Regional Entity: Reporting Party: | | | | | | | | | |
| **SCHEDULE 3. PART A. PROJECTED DEMAND AND CAPACITY - SUMMER** | | | | | | | | | |
| **LINE NO.** |  | **YEAR** | | | | | | | |
|  | | **Year 1**  **(RY 2017)** | **Year 2**  **(2018)** | | **….** | **Year 9**  **(2025)** | **Year 10**  **(2026)** |
| **CAPACITY - Continued (IN MEGAWATTS)** | | | | | | | | | |
| **11** | **EXISTING, CERTAIN & NET FIRM**  **TRANSFERS (6a+10b-11b)** |  | |  |  | |  |  |  |
| **12** | **ANTICIPATED CAPACITY**  **RESOURCES (12+8a)** |  | |  |  | |  |  |  |
| **13** | **PROSPECTIVE CAPACITY**  **RESOURCES** |  | |  |  | |  |  |  |
| **14** | **ADJUSTED POTENTIAL CAPACITY**  **RESOURCES** |  | |  |  | |  |  |  |
|  |  |  | |  |  | |  |  |  |
| **RESERVE AND CAPACITY MARGINS** | | | | | | | | | |
| **15** | **TARGET RESERVE MARGIN FOR**  **Region/Assessment Area**  **Margin** |  | |  |  | |  |  |  |
|  |  |  | |  |  | |  |  |  |
| **16** | **EXISTING, CERTAIN & NET FIRM**  **TRANSFERS** |  | |  |  | |  |  |  |
| **16.1** | **Reserve Margin** |  | |  |  | |  |  |  |
| **16.2** | **Capacity Margin** |  | |  |  | |  |  |  |
| **17** | **ANTICIPATED RESOURCES** |  | |  |  | |  |  |  |
| **17.1** | **Reserve Margin** |  | |  |  | |  |  |  |
| **17.2** | **Capacity Margin** |  | |  |  | |  |  |  |
| **18** | **PROSPECTIVE RESOURCES** |  | |  |  | |  |  |  |
| **18.1** | **Reserve Margin** |  | |  |  | |  |  |  |
| **18.2** | **Capacity Margin** |  | |  |  | |  |  |  |
| **19** | **ADJUSTED POTENTIAL RESOURCES** |  | |  |  | |  |  |  |
| **19.1** | **Reserve Margin** |  | |  |  | |  |  |  |
| **19.2** | **Capacity Margin** |  | |  |  | |  |  |  |
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| **SCHEDULE 3. PART B. PROJECTED DEMAND AND CAPACITY - WINTER** | | | | | | | |
| **LINE NO.** |  | **YEAR** | | | | | |
|  | **Year 1 (RY 2017)** | **Year 2 (2018)** | **….** | **Year 9 (2025)** | **Year 10 (2026)** |
| **DEMAND (IN MEGAWATTS)** | | | | | | | |
| **1** | **Unrestricted Peak Demand** |  |  |  |  |  |  |
| **1a** | **New Conservation (Energy Efficiency)** |  |  |  |  |  |  |
| **1b** | **Estimated Diversity** |  |  |  |  |  |  |
| **1c** | **Additions for non-member load** |  |  |  |  |  |  |
| **1d** | **Stand-by Load Under Contract** |  |  |  |  |  |  |
| **1e** | **Non-Controllable Demand Response** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **2** | **Total Internal Demand** |  |  |  |  |  |  |
| **2a** | **Direct Control Load**  **Management** |  |  |  |  |  |  |
| **2b** | **Interruptible Load** |  |  |  |  |  |  |
| **2c** | **Critical Peak Pricing with**  **Control** |  |  |  |  |  |  |
| **2d** | **Load as a Capacity Resource** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **3** | **Net Internal Demand** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **4** | **Total Demand Response** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **SUPPLY CATEGORIES (IN MEGAWATTS)** | | | | | | | |
| **5** | **TOTAL INTERNAL CAPACITY**  **(sum of 6 and 8a)** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **6** | **EXISTING CAPACITY (6a+6b+6c)** |  |  |  |  |  |  |
| **6a** | **Certain** |  |  |  |  |  |  |
| **6b** | **Other** |  |  |  |  |  |  |
| **6c** | **Unavailable** |  |  |  |  |  |  |
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| **SCHEDULE 3. PART B. PROJECTED DEMAND AND CAPACITY - WINTER** | | | | | | | | | | | | | | | |
| **LINE NO.** |  | | | **YEAR** | | | | | | | | | | | |
|  | | **Year 1 (RY 2017)** | **Year 2 (2018)** | | **….** | | **Year 9 (2025)** | | **Year 10 (2026)** | | |
| **FUTURE CAPACITY CATEGORIES (IN MEGAWATTS)** | | | | | | | | | | | | | | | |
| **7** | **FUTURE CAPACITY ADDITIONS** | | |  | |  |  | | |  |  | | |  | |
| **7a** | **Tier 1 (Most Certain)** | | |  | |  |  | | |  |  | | |  | |
| **7b** | **Tier 2** | | |  | |  |  | | |  |  | | |  | |
| **7c** | **Tier 3 (Least Certain)** | | |  | |  |  | | |  |  | | |  | |
|  |  | | |  | |  |  | | |  |  | | |  | |
| **8** | **ANTICIPATED CAPACITY**  **(6a+8a)** | | |  | |  |  | | |  |  | | |  | |
|  |  | | |  | |  |  | | |  |  | | |  | |
| **CAPACITY TRANSFERS (IN MEGAWATTS)** | | | | | | | | | | | | | | | |
| **9** | | **CAPACITY TRANSFERS – IMPORTS** |  | |  | | |  | |  | |  | | |  |
|  | |  |  | |  | | |  | |  | |  | | |  |
| **9b** | | **Firm** |  | |  | | |  | |  | |  | | |  |
| **9c** | | **Expected** |  | |  | | |  | |  | |  | | |  |
|  | |  |  | |  | | |  | |  | |  | | |  |
| **10** | | **CAPACITY TRANSFERS – EXPORTS** |  | |  | | |  | |  | |  | | |  |
|  | |  |  | |  | | |  | |  | |  | | |  |
| **10ab** | | **Firm** |  | |  | | |  | |  | |  | | |  |
| **10b** | | **Expected** |  | |  | | |  | |  | |  | | |  |
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| **SCHEDULE 3. PART B. HISTORICAL AND PROJECTED DEMAND AND CAPACITY - WINTER** | | | | | | | | | |
| **LINE NO.** |  | **YEAR** | | | | | | | |
|  | | **Year 1**  **(RY 2017)** | **Year 2**  **(2018)** | | **….** | **Year 9**  **(2025)** | **Year 10**  **(2026)** |
| **CAPACITY - Continued (IN MEGAWATTS)** | | | | | | | | | |
| **11** | **EXISTING, CERTAIN & NET FIRM**  **TRANSFERS (6a+10b-11b)** |  | |  |  | |  |  |  |
| **12** | **ANTICIPATED CAPACITY**  **RESOURCES (12+8a)** |  | |  |  | |  |  |  |
| **13** | **PROSPECTIVE CAPACITY**  **RESOURCES** |  | |  |  | |  |  |  |
| **14** | **ADJUSTED POTENTIAL CAPACITY**  **RESOURCES** |  | |  |  | |  |  |  |
|  |  |  | |  |  | |  |  |  |
| **RESERVE AND CAPACITY MARGINS** | | | | | | | | | |
| **15** | **TARGET RESERVE MARGIN FOR**  **Region/Assessment Area** |  | |  |  | |  |  |  |
|  |  |  | |  |  | |  |  |  |
| **16** | **EXISTING, CERTAIN & NET FIRM**  **TRANSFERS** |  | |  |  | |  |  |  |
| **16.1** | **Reserve Margin** |  | |  |  | |  |  |  |
| **16.2** | **Capacity Margin** |  | |  |  | |  |  |  |
| **17** | **ANTICIPATED RESOURCES** |  | |  |  | |  |  |  |
| **17.1** | **Reserve Margin** |  | |  |  | |  |  |  |
| **17.2** | **Capacity Margin** |  | |  |  | |  |  |  |
| **18** | **PROSPECTIVE RESOURCES** |  | |  |  | |  |  |  |
| **18.1** | **Reserve Margin** |  | |  |  | |  |  |  |
| **18.2** | **Capacity Margin** |  | |  |  | |  |  |  |
| **19** | **ADJUSTED POTENTIAL RESOURCES** |  | |  |  | |  |  |  |
| **19.1** | **Reserve Margin** |  | |  |  | |  |  |  |
| **19.2** | **Capacity Margin** |  | |  |  | |  |  |  |
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|  | **FORM EIA-411**  **COORDINATED BULK POWER SUPPLY AND DEMAND PROGRAM REPORT** | **OMB No. 1905-0129**  **Approval Expires: xx/xx/xxxx**  **Burden: 122 hours** |
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| **SCHEDULE 4. BULK TRANSMISSION FACILITY POWER FLOW CASES** | | | | |
| **Line**  **No.** |  | | | |
| **1** | **Case Name:** |  | | |
| **2** | **Year of Study:** |  | | |
| **3** | **Case Number:** |  | | |
|  | **PROSPECTIVE FACILITIES AND CONNECTIONS** | | | |
|  | **Name And Type**  **Of Facility**  **(a)** | **Projected**  **In-Service Date**  **(e.g., 12-2018)**  **(b)** | **Connections** | |
| **4** | **Bus Number**  **(c)** | **Bus Name**  **(d)** |
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|  | **FORM EIA-411**  **COORDINATED BULK POWER SUPPLY AND DEMAND PROGRAM REPORT** | **OMB No. 1905-0129**  **Approval Expires: xx/xx/xxxx**  **Burden: 122 hours** |
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| **SCHEDULE 5. BULK ELECTRIC TRANSMISSION SYSTEM MAPS** | | | | | |
| **LINE NO.** |  | | | | |
| **1** | **Specify the Number of Maps**  **Provided:** | |  |  | |
| **2** | **For each map provide file name, coverage, and map software:** | | | | |
|  | **MAP NUMBER (if applicable) (a)** | **FILE NAME (if applicable) (b)** | | | **MAP SOFTWARE (if applicable) (c)** |
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|  | **FORM EIA-411**  **COORDINATED BULK POWER SUPPLY AND DEMAND PROGRAM REPORT** | **OMB No. 1905-0129**  **Approval Expires: xx/xx/xxxx**  **Burden: 122 hours** |
| Regional Entity: Reporting Party: | | |

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| **SCHEDULE 6. PART A. EXISTING AND PROJECTED CIRCUIT MILES** | | | | | | | | | | | | | |
| **Line**  **No.** |  | **CIRCUIT MILES** | | | | | | | | | | | |
|  |  | In Report Year 2014 and Report Year 2015 report circuit miles for voltage categories 100 kV and above. From Report Year 2016 forward report only for transmission elements that are part of the new BES definition | | | | | | | | | | | |
|  |  | **AC (kV)** | | | | | | | **DC (kV)** | | | | |
|  |  | **Less than**  **100**  **121-**  **150** | **100-**  **199** | **200-**  **299** | **300-**  **399** | **400-**  **599** | **600+** | **TOTAL** | **100-**  **299** | **300-**  **399** | **400-**  **599** | **600+** | **TOTAL** |
| **1** | **Existing (as of last**  **day of prior report**  **year)** |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | **Under**  **Construction (as of first day of current report year)** |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | **Planned**  **(completion within first five years)** |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | **Conceptual**  **(completion within first five years)** |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | **Planned**  **(completion within**  **second five years)** |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | **Conceptual**  **(completion within second five years)** |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | **Sum of Existing,**  **Under**  **Construction, and**  **Planned Transmission (full ten-year period)** |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | **Sum of Existing, Under Construction, Planned, and Conceptual Transmission (full ten-year period)** |  |  |  |  |  |  |  |  |  |  |  |  |
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|  | | | **FORM EIA-411**  **COORDINATED BULK POWER SUPPLY AND DEMAND PROGRAM REPORT** | | **OMB No. 1905-0129**  **Approval Expires: xx/xx/xxxx**  **Burden: 122 hours** | |
| Regional Entity: Reporting Party: | | | | | | |
| **SCHEDULE 6. PART B. CHARACTERISTICS OF PROJECTED TRANSMISSION LINE ADDITIONS** | | | | | | |
| **LINE NO.** |  | **TRANSMISSION LINE (a)** | | **TRANSMISSION LINE (b)** | | **TRANSMISSION LINE (c)** |
| **TRANSMISSION LINE IDENTIFICATION** | | | | | | |
| **1** | **Project Name** |  | |  | |  |
| **2** | **Project Status** |  | |  | |  |
| **3** | **Tie line** |  | |  | |  |
| **4a** | **Primary Driver** |  | |  | |  |
| **4b** | **Secondary Driver** |  | |  | |  |
| **5** | **Terminal Location (From)** |  | |  | |  |
| **6** | **Terminal Location (To)** |  | |  | |  |
| **TRANSMISSION LINE OWNERSHIP** | | | | | | |
| **7** | **Company Name** |  | |  | |  |
| **8** | **EIA Company Code** |  | |  | |  |
| **9** | **Type of Organization** |  | |  | |  |
| **10** | **Percent Ownership** |  | |  | |  |
| **TRANSMISSION LINE DATA** | | | | | | |
| **11** | **Line Length (miles)** |  | |  | |  |
| **12** | **Line Type** | **[ ] OH [ ] UG [ ] SM** | | **[ ] OH [ ] UG [ ] SM** | | **[ ] OH [ ] UG [ ] SM** |
| **13** | **Voltage Type** | **[ ] AC [ ] DC** | | **[ ] AC [ ] DC** | | **[ ] AC [ ] DC** |
| **14** | **Voltage Operating**  **(Kilovolts)** |  | |  | |  |
| **15** | **Voltage Design (Kilovolts)** |  | |  | |  |
| **16** | **Circuits per Structure**  **Present** |  | |  | |  |
| **17** | **Circuits per Structure**  **Ultimate** |  | |  | |  |
| **18** | **Capacity Rating (MVA)** |  | |  | |  |
| **19** | **Original In-Service Date** |  | |  | |  |
| **20** | **Expected In-Service Date** |  | |  | |  |
| **21** | **Line Delayed?** |  | |  | |  |
| **22** | **Cause of Delay** |  | |  | |  |
| **LEGEND** | | | | | | |
| **Line Type: OH=Overhead**  **UG=Underground SM=Submarine** | | **Voltage Type: AC=Alternating Current**  **DC=Direct Current** | |  | | |

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| **SCHEDULE 7. PART A, ANNUAL DATA ON TRANSMISSION LINE OUTAGES FOR AC LINES**  **(Report following data for each applicable EHV Voltage Class)** | | | | | | | | | | | | | | |
|  | | | In Report Year 2014 and Report Year 2015 report for voltage categories 200 kV and above. From Report Year 2016 forward report only for transmission elements that are part of the new BES definition. | | | | | | | | | | | |
| **LINE NO.** | **Applicable AC Voltage Class** | | **Less Than**  **100 kV (a)** | | **100-199 kV**  **(b)** | | **200-299 kV**  **(c)** | | **300-399 kV**  **(d)** | | **400-599 kV**  **(e)** | | **600-799 kV**  **(f)** | |
| **AUTOMATIC (Unscheduled), Sustained Outages for Specified Voltage Class** | | | | | | | | | | | | | | |
| **1** | **Number of Outages** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **1a** | **Number of Single Mode Outages** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **1b** | **Number of Dependent Mode Outages** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **1c** | **Number of Common Mode Outages** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **2** | **Number of Circuit-Hours Out of Service** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3** | **Initiating (I) and Sustained (S) Causes**  **(Count of Outages per Cause Category)** | **I** | | **S** | **I** | **S** | **I** | **S** | **I** | **S** | **I** | **S** | **I** | **S** |
| **3a** | **Weather, excluding lightning** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3b** | **Lightning** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3c** | **Environmental** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3d** | **Foreign Interference** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3e** | **Contamination** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3f** | **Fire** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3g** | **Vandalism, Terrorism, or Malicious Acts** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3h** | **Failed AC Substation Equipment** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3i** | **Failed AC/DC Terminal Equipment** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3j** | **Failed Protection System Equipment** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3k** | **Failed AC Circuit Equipment** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3l** | **Failed DC Circuit Equipment** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3m** | **Human Error** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3n** | **Vegetation** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3o** | **Power System Condition** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3p** | **Unknown** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **3q** | **Other** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **NON-AUTOMATIC, Operational Outages for Specified Voltage Class** | | | | | | | | | | | | | | |
| **4** | **Number of Outages** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **5** | **Number of Circuit-Hours Out of Service** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **6** | **Outage Cause (Count)** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **6a** | **Emergency** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **6b** | **System Voltage Limit Mitigation** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **6c** | **System Operating Limit Mitigation**  **(excluding voltage)** |  | |  |  |  |  |  |  |  |  |  |  |  |
| **6d** | **Other Operational Outage** |  | |  |  |  |  |  |  |  |  |  |  |  |

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| **SCHEDULE 7. PART B, ANNUAL DATA ON TRANSMISSION LINE OUTAGES FOR DC LINES**  **(Report following data for each applicable EHV Voltage Class)** | | | | | | | | | | | | | | | | |
|  | | In Report Year 2014 and Report Year 2015 report for voltage categories 200 kV and above. From Report Year 2016 forward report only for transmission elements that are part of the new BES definition. | | | | | | | | | | | | | | |
| **LINE NO.** | **Applicable DC Voltage Class** | **Less**  **Than**  **± 100 kV (a)** | | | **± 100-**  **199 kV (b)** | | **± 200-**  **299 kV**  **(c)** | | **± 300-**  **399 kV**  **(d)** | | **± 400-**  **499 kV**  **(e)** | | **± 500-**  **599 kV** | | **± 600-**  **799 kV**  **(f)** | |
| **AUTOMATIC (Unscheduled), Sustained Outages for Specified Voltage Class** | | | | | | | | | | | | | | | | |
| **1** | **Number of Outages** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **1a** | **Number of Single Mode Outages** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **1b** | **Number of Dependent Mode Outages** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **1c** | **Number of Common Mode Outages** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | **Number of Circuit-Hours Out of Service** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | **Initiating (I) and Sustained (S) Causes**  **(Count of Outages per Cause Category)** |  | **I** | **S** | **I** | **S** | **I** | **S** | **I** | **S** | **I** | **S** | **I** | **S** | **I** | **S** |
| **3a** | **Weather, excluding lightning** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3b** | **Lightning** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3c** | **Environmental** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3d** | **Foreign Interference** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3e** | **Contamination** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3f** | **Fire** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3g** | **Vandalism, Terrorism, or Malicious Acts** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3h** | **Failed AC Substation Equipment** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3i** | **Failed AC/DC Terminal Equipment** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3j** | **Failed Protection System Equipment** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3k** | **Failed AC Circuit Equipment** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3l** | **Failed DC Circuit Equipment** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3m** | **Human Error** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3n** | **Vegetation** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3o** | **Power System Condition** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3p** | **Unknown** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3q** | **Other** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **NON-AUTOMATIC, Operational Outages for Specified Voltage Class** | | | | | | | | | | | | | | | | |
| **4** | **Number of Outages** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | **Number of Circuit-Hours Out of Service** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | **Outage Cause (Count)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6a** | **Emergency** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6b** | **System Voltage Limit Mitigation** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6c** | **System Operating Limit Mitigation**  **(excluding voltage)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6d** | **Other Operational Outage** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| **SCHEDULE 7. PART C, ANNUAL DATA ON TRANSFORMER OUTAGES**  **(Report following data for each applicable class)** | | | | | | | | | | | | | | | |
|  | | In Report Year 2014 and Report Year 2015 report for transformers with low-side 200 kV and above. From Report Year 2016 forward report only for elements that are part of the new BES definition. | | | | | | | | | | | | | |
| **LINE NO.** | **Applicable Transformer Low-Side Voltage Class** | **Less Than**  **100 kV (a)** | | | **100-199 kV**  **(b)** | | | **200-299 kV**  **(c)** | | **300-399 kV**  **(d)** | | **400-599 kV**  **(e)** | | **600-799 kV**  **(f)** | |
| **AUTOMATIC (Unscheduled), Sustained Outages for Specified Voltage Class** | | | | | | | | | | | | | | | |
| **1** | **Number of Outages** |  | |  | | | |  | |  | |  | |  | |
| **1a** | **Number of Single Mode Outages** |  | |  | | | |  | |  | |  | |  | |
| **1b** | **Number of Dependent Mode Outages** |  | |  | | | |  | |  | |  | |  | |
| **1c** | **Number of Common Mode Outages** |  | |  | | | |  | |  | |  | |  | |
| **2** | **Number of Transformer-Hours Out of Service** |  | |  | | | |  | |  | |  | |  | |
| **3** | **Initiating (I) and Sustained (S) Causes**  **(Count of Outages per Cause Category)** | **I** | **S** | **I** | | **S** | | **I** | **S** | **I** | **S** | **I** | **S** | **I** | **S** |
| **3a** | **Weather, excluding lightning** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3b** | **Lightning** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3c** | **Environmental** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3d** | **Foreign Interference** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3e** | **Contamination** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3f** | **Fire** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3g** | **Vandalism, Terrorism, or Malicious Acts** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3h** | **Failed AC Substation Equipment** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3i** | **Failed AC/DC Terminal Equipment** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3j** | **Failed Protection System Equipment** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3k** | **Failed AC Circuit Equipment** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3l** | **Failed DC Circuit Equipment** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3m** | **Human Error** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3n** | **Vegetation** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3o** | **Power System Condition** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3p** | **Unknown** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **3q** | **Other** |  |  |  | |  | |  |  |  |  |  |  |  |  |
| **NON-AUTOMATIC, Operational Outages for Specified Voltage Class** | | | | | | | | | | | | | | | |
| **4** | **Number of Outages** |  | |  | | |  | | |  | |  | |  | |
| **5** | **Number of Transformer-Hours Out of Service** |  | |  | | |  | | |  | |  | |  | |
| **6** | **Outage Cause (Count)** |  | |  | | |  | | |  | |  | |  | |
| **6a** | **Emergency** |  | |  | | |  | | |  | |  | |  | |
| **6b** | **System Voltage Limit Mitigation** |  | |  | | |  | | |  | |  | |  | |
| **6c** | **System Operating Limit Mitigation**  **(excluding voltage)** |  | |  | | |  | | |  | |  | |  | |
| **6d** | **Other Operational Outage** |  | |  | | |  | | |  | |  | |  | |

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| **SCHEDULE 7. PART D, TRANSMISSION ELEMENT INVENTORY AND EVENT SUMMARY**  **(Report following data for each applicable voltage class)** | | | | | | | | |
| **LINE NO.** |  | In Report Year 2014 and Report Year 2015 report for voltage categories 200 kV and above. From Report Year 2016 forward report only for transmission elements that are part of the new BES definition. | | | | | | |
| **AC Circuit Voltage Class** | | **Less Than 100 kV**  **(a)** | **100-199 kV**  **(b)** | **200-299 kV**  **(c)** | **300-399 kV**  **(d)** | **400-599 kV**  **(e)** | **600-799 kV**  **(f)** | **All Voltages**  **(g)** |
| **1** | **Number of AC Circuits (Total)** |  |  |  |  |  |  | |
| **1a** | Overhead |  |  |  |  |  |  | |
| **1b** | Underground |  |  |  |  |  |  | |
| **2** | **Number of AC Circuit Miles (Total)** |  |  |  |  |  |  | |
| **2a** | Overhead |  |  |  |  |  |  | |
| **2b** | Underground |  |  |  |  |  |  | |
| **3** | **Number of AC Multi-Circuit Structure Miles** |  |  |  |  |  |  |  |
| **DC Circuit Voltage Class** | | **Less Than**  **± 100 kV**  **(a)** | **± 100-199 kV**  **(b)** | **± 200-299 kV**  **(c)** | **± 300-399 kV**  **(d)** | **± 400-499**  **kV**  **(e)** | **± 500-599**  **kV**  **(f)** | **± 600-799**  **kV**  **(g)** |
| **4** | **Number of DC Circuits (Total)** |  |  |  |  |  |  |  |
| **4a** | Overhead |  |  |  |  |  |  |  |
| **4b** | Underground |  |  |  |  |  |  |  |
| **5** | **Number of DC Circuit Miles (Total)** |  |  |  |  |  |  |  |
| **5a** | Overhead |  |  |  |  |  |  |  |
| **5b** | Underground |  |  |  |  |  |  |  |
| Transformer Low-Side Voltage Class | | **Less Than 100 kV**  **(a)** | **100-199 kV**  **(b)** | **200-299 kV**  **(b)** | **300-399 kV**  **(c)** | **400-599 kV**  **(d)** | **600-799 kV**  **(e)** | **Reserved (f)** |
| **6** | Number of Transformers |  |  |  |  |  |  |  |
| **7** | Total Number of Events (all Voltage Classes) |  | | | | | | |

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|  | **FORM EIA-411**  **COORDINATED BULK POWER SUPPLY AND DEMAND PROGRAM REPORT** | **OMB No. 1905-0129**  **Approval Expires: xx/xx/xxxx**  **Burden: 122 hours** |
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| **SCHEDULE 8. ANNUAL DATA ON GENERATING UNIT OUTAGES, DERATINGS AND**  **PERFORMANCE INDEXES**  **For Conventional Units** | | | | | | | | | | |
| **SCHEDULE 8. PART A. ANNUAL DATA ON GENERATING UNIT OUTAGE HOURS AND COUNTS** | | | | | | | | | | |
| **LINE NO.** | **Conventional Generating Unit** | **Total Number of GADS Generator Units** | **Forced Outage** | | **Maintenance Outage** | | | | **Planned Outage** | |
| **Hours**  **(FOH)** | **Count**  **(FO)** | **Hours**  **(MOH)** | | **Count**  **(MO)** | | **Hours**  **(POH)** | **Count**  **(PO)** |
|  |  | **A** | **B** | **C** | **D** | | **E** | | **F** | **G** |
|  | **By Unit Type** | | | | | | | | | |
| **1** | **Coal Steam (ST)** |  |  |  |  | |  | |  |  |
| **2** | **Other Fossil Steam (ST)** |  |  |  |  | |  | |  |  |
| **3** | **Nuclear (NUC)** |  |  |  |  | |  | |  |  |
| **4** | **Gas Turbines (GT)** |  |  |  |  | |  | |  |  |
| **5** | **Combined Cycle (CT, CA)** |  |  |  |  | |  | |  |  |
| **6** | **Int. Combus. Engines (IC)** |  |  |  |  | |  | |  |  |
| **7** | **Hydro (HY)** |  |  |  |  | |  | |  |  |
| **8** | **Other** |  |  |  |  | |  | |  |  |
| **9** | **TOTAL** |  |  |  |  | |  | |  |  |
|  | **By Capacity** | | | | | | | | | |
| **10** | **199 MW and below** |  |  |  |  | |  | |  |  |
| **11** | **200-399 MW** |  |  |  |  | |  | |  |  |
| **12** | **400-699 MW** |  |  |  |  | |  | |  |  |
| **13** | **700 MW and above** |  |  |  |  | |  | |  |  |
| **14** | **TOTAL** |  |  |  |  | |  | |  |  |
|  |  | | | | | | | | | |
|  | **Coal Units by Vintage** | | | | | | | | | |
|  | **Units that entered commercial operation in or before 1972** | | | | | | | | | |
| **15** | **Coal Steam – Subcritical** |  |  |  |  | |  | |  |  |
| **16** | **Coal Steam –Supercritical** |  |  |  |  | |  | |  |  |
|  | **Units that entered commercial operation in or after 1973** | | | | | | | | | |
| **17** | **Coal Steam – Subcritical** |  |  |  |  | |  | |  |  |
| **18** | **Coal Steam –Supercritical** |  |  |  |  | |  | |  |  |
|  | **Combined Cycle Units by Vintage** | | | | | | | | | |
|  | **Units that entered commercial operation in or before 2002** | | | | | | | | | |
| **19** | **Combined Cycle** |  |  |  |  |  | |  | |  |
|  | **Units that entered commercial operation in or after 2003** | | | | | | | | | |
| **20** | **Combined Cycle** |  |  |  |  |  | |  | |  |

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| **SCHEDULE 8. PART B. ANNUAL DATA ON GENERATING UNIT DERATING HOURS AND COUNTS** | | | | | | | | |
| **LINE NO.** | **Conventional Generating**  **Unit** | **Forced Derating** | | **Maintenance Derating** | | **Planned Derating** | | **Equivalent**  **Seasonal**  **Derating Hours (ESDH)** |
| **Equivalent Hours (EFDH)** | **Counts (Unique) (FD)** | **Equivalent Hours (EMDH)** | **Counts (Unique) (D4)** | **Equivalent Hours (EPDH)** | **Counts (Unique) (PD)** |
|  |  | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
|  | **By Unit Type** | | | | | | | |
| **1** | **Coal Steam (ST)** |  |  |  |  |  |  |  |
| **2** | **Other Fossil Steam (ST)** |  |  |  |  |  |  |  |
| **3** | **Nuclear (NUC)** |  |  |  |  |  |  |  |
| **4** | **Gas Turbines (GT)** |  |  |  |  |  |  |  |
| **5** | **Combined Cycle (CT, CA)** |  |  |  |  |  |  |  |
| **6** | **Int. Combus. Engines (IC)** |  |  |  |  |  |  |  |
| **7** | **Hydro (HY)** |  |  |  |  |  |  |  |
| **8** | **Other** |  |  |  |  |  |  |  |
| **9** | **TOTAL** |  |  |  |  |  |  |  |
|  | **By Capacity** | | | | | | | |
| **10** | **199 MW and below** |  |  |  |  |  |  |  |
| **11** | **200-399 MW** |  |  |  |  |  |  |  |
| **12** | **400-699 MW** |  |  |  |  |  |  |  |
| **13** | **700 MW and above** |  |  |  |  |  |  |  |
| **14** | **TOTAL** |  |  |  |  |  |  |  |
|  |  | | | | | | | |
|  | **Coal Units by Vintage** | | | | | | | |
|  | **Units that entered commercial operation in or before 1972** | | | | | | | |
| **15** | **Coal Steam – Subcritical** |  |  |  |  |  |  |  |
| **16** | **Coal Steam –Supercritical** |  |  |  |  |  |  |  |
|  | **Units that entered commercial operation in or after 1973** | | | | | | | |
| **17** | **Coal Steam – Subcritical** |  |  |  |  |  |  |  |
| **18** | **Coal Steam –Supercritical** |  |  |  |  |  |  |  |
|  | **Combined Cycle Units by Vintage** | | | | | | | |
|  | **Units that entered commercial operation in or before 2002** | | | | | | | |
| **19** | **Combined Cycle** |  |  |  |  |  |  |  |
|  | **Units that entered commercial operation in or after 2003** | | | | | | | |
| **20** | **Combined Cycle** |  |  |  |  |  |  |  |

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| **SCHEDULE 8. PART C.1. ANNUAL DATA ON GENERATING UNIT PERFORMANCE INDEXES** | | | | | | | | |
| **Line**  **No.** | **Conventional Generating**  **Unit** | **Net**  **Capacity**  **Factor**  **(NCF)** | **Net Output Factor (NOF)** | **Service Factor (SF)** | **Availability Factor (AF)** | **Unavailability Factor (UF)** | **Unit**  **Derating**  **Factor**  **(UDF)** | **Equivalent**  **Availability**  **Factor**  **(EAF)** |
|  |  | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
|  | **By Unit Type** | | | | | | |  |
| **1** | **Coal Steam (ST)** |  |  |  |  |  |  |  |
| **2** | **Fossil Steam (ST)** |  |  |  |  |  |  |  |
| **3** | **Nuclear (NUC)** |  |  |  |  |  |  |  |
| **4** | **Gas Turbines (GT)** |  |  |  |  |  |  |  |
| **5** | **Combined Cycle (CT, CA)** |  |  |  |  |  |  |  |
| **6** | **Int. Combus. Engines (IC)** |  |  |  |  |  |  |  |
| **7** | **Hydro (HY)** |  |  |  |  |  |  |  |
| **8** | **Other** |  |  |  |  |  |  |  |
| **9** | **TOTAL** |  |  |  |  |  |  |  |
|  | **By Capacity** | | | | | | |  |
| **10** | **199 MW and below** |  |  |  |  |  |  |  |
| **11** | **200-399 MW** |  |  |  |  |  |  |  |
| **12** | **400-699 MW** |  |  |  |  |  |  |  |
| **13** | **700 MW and above** |  |  |  |  |  |  |  |
| **14** | **TOTAL** |  |  |  |  |  |  |  |
|  |  | | | | | | |  |
|  | **Coal Units by Vintage** | | | | | | | |
|  | **Units that entered commercial operation in or before 1972** | | | | | | | |
| **15** | **Coal Steam – Subcritical** |  |  |  |  |  |  |  |
| **16** | **Coal Steam–Supercritical** |  |  |  |  |  |  |  |
|  | **Units that entered commercial operation in or after 1973** | | | | | | | |
| **17** | **Coal Steam – Subcritical** |  |  |  |  |  |  |  |
| **18** | **Coal Steam–Supercritical** |  |  |  |  |  |  |  |
|  | **Combined Cycle Units by Vintage** | | | | | | | |
|  | **Units that entered commercial operation in or before 2002** | | | | | | | |
| **19** | **Combined Cycle** |  |  |  |  |  |  |  |
|  | **Units that entered commercial operation in or after 2003** | | | | | | | |
| **20** | **Combined Cycle** |  |  |  |  |  |  |  |

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| **SCHEDULE 8. PART C.2. ANNUAL DATA ON GENERTING UNIT PERFORMANCE INDEXES** | | | | | | |
| **LINE NO.** | **Conventional Generating**  **Unit** | **Equivalent**  **Forced Outage**  **Rate**  **(FOR)** | **Equivalent**  **Maintenance Outage Rate (MOR)** | **Equivalent**  **Planned Outage Rate (POR)** | **Forced Outage Rate Demand (FORd)** | **Equivalent**  **Forced Outage Rate Demand (EFORd)** |
|  |  | **A** | **B** | **C** | **D** | **E** |
|  | **By Unit Type** | | | | | |
| **1** | **Coal Steam (ST)** |  |  |  |  |  |
| **2** | **Fossil Steam (ST)** |  |  |  |  |  |
| **3** | **Nuclear (NUC)** |  |  |  |  |  |
| **4** | **Gas Turbines (GT)** |  |  |  |  |  |
| **5** | **Combined Cycle (CT, CA)** |  |  |  |  |  |
| **6** | **Int. Combus. Engines (IC)** |  |  |  |  |  |
| **7** | **Hydro (HY)** |  |  |  |  |  |
| **8** | **Other** |  |  |  |  |  |
| **9** | **TOTAL** |  |  |  |  |  |
|  | **By Capacity** | | | | | |
| **10** | **199 MW and below** |  |  |  |  |  |
| **11** | **200-399 MW** |  |  |  |  |  |
| **12** | **400-699 MW** |  |  |  |  |  |
| **13** | **700 MW and above** |  |  |  |  |  |
| **14** | **TOTAL** |  |  |  |  |  |
|  |  | | | | | |
|  | **Coal Units by Vintage** | | | | | |
|  | **Units that entered commercial operation in or before 1972** | | | | | |
| **15** | **Coal Steam – Subcritical** |  |  |  |  |  |
| **16** | **Coal Steam–Supercritical** |  |  |  |  |  |
|  | **Units that entered commercial operation in or after 1973** | | | | | |
| **17** | **Coal Steam – Subcritical** |  |  |  |  |  |
| **18** | **Coal Steam–Supercritical** |  |  |  |  |  |
|  | **Combined Cycle Units by Vintage** | | | | | |
|  | **Units that entered commercial operation in or before 2002** | | | | | |
| **19** | **199 MW and below** |  |  |  |  |  |
|  | **Units that entered commercial operation in or after 2003** | | | | | |
| **20** | **199 MW and below** |  |  |  |  |  |

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| **SCHEDULE 8. PART D. ANNUAL DATA ON GENERATING UNIT PRIMARY CAUSE OF ACTIVE STATE FORCED OUTAGES** | | | | | | | | | |
| **LINE NO.** | **Forced Outage and**  **Unplanned Derating Causes** | **Fossil Steam Units (ST)** | **Nuclear Units (NUC)** | **Gas Turbine Units (GT)** | **Combined Cycle Units**  **(CT, CA)** | **Internal Combustion Engines**  **(IC)** | **Hydro/**  **Pumped Storage Units**  **(HY)** | **All Other Units** | **Total Outage Count** |
|  |  | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** |
|  | **FORCED OUTAGE EVENTS** | | | | | | | | |
| **1** | **Major Components** |  |  |  |  |  |  |  |  |
| **1.a** | **Boiler** |  |  |  |  |  |  |  |  |
| **1.b** | **Reactor** |  |  |  |  |  |  |  |  |
| **1.c** | **Engine** |  |  |  |  |  |  |  |  |
| **1.d** | **Turbine** |  |  |  |  |  |  |  |  |
| **1.e** | **Generator** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **2** | **Balance of Plant (BoP)** |  |  |  |  |  |  |  |  |
| **2.a** | **Water Systems** |  |  |  |  |  |  |  |  |
| **2.b** | **Electrical** |  |  |  |  |  |  |  |  |
| **2.c** | **Power Station Switchyard** |  |  |  |  |  |  |  |  |
| **2.d** | **Auxiliary Systems** |  |  |  |  |  |  |  |  |
| **2.e** | **All Other BoP Systems** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **3** | **Pollution Control Equipment** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **4** | **External** |  |  |  |  |  |  |  |  |
| **4.a** | **Severe Weather** |  |  |  |  |  |  |  |  |
| **4.b** | **Non-weather catastrophes** |  |  |  |  |  |  |  |  |
| **4.c** | **Economic** |  |  |  |  |  |  |  |  |
| **4.d** | **Fuel Quality** |  |  |  |  |  |  |  |  |
| **4.e** | **Transmission System** |  |  |  |  |  |  |  |  |
| **4.f** | **Other External** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **5** | **Regulatory, Safety,**  **Environmental** |  |  |  |  |  |  |  |  |
| **5.a** | **Regulatory** |  |  |  |  |  |  |  |  |
| **5.b** | **Stack Emissions** |  |  |  |  |  |  |  |  |
| **5.c** | **Other Env. Limitations** |  |  |  |  |  |  |  |  |
| **5.d** | **Safety** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **6** | **Personnel or Procedure**  **Errors** |  |  |  |  |  |  |  |  |
| **6.a** | **Personnel Errors** |  |  |  |  |  |  |  |  |
| **6.b** | **Procedural Errors** |  |  |  |  |  |  |  |  |
| **6.c** | **Staff Shortage** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **7** | **Performance** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **8** | **All Other Causes** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **9** | **TOTAL (All Causes)** |  |  |  |  |  |  |  |  |

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| **SCHEDULE 9. SMART GRID TRANSMISSION SYSTEM DEVICES AND APPLICATIONS** | | | |
| ***SCHEDULE 9. PART A. DYNAMIC CAPABILITY RATING SYSTEMS (DCRSs)*** | | | |
|  | | | |
| **LINE NO.** | **AC Circuit Voltage Class** | **100- 299 kV**  **(A)** | **300-799 kV**  **(B)** |
| **1** | **Number of transmission circuits utilizing a dynamic capability rating system** |  |  |
| **2** | **Miles of AC transmission lines utilizing a dynamic capability rating system** |  |  |
| **3** | **Number of station transformers utilizing a dynamic capability rating system** |  |  |

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| ***SCHEDUEL 9. PART B. PHASOR MEASUREMENT UNITS (PMUs)*** | | | |
|  | | | |
| **LINE NO.** | **AC Circuit Voltage Class** | **100- 299 kV**  **(A)** | **300-799 kV**  **(B)** |
| **1** | **Number of non-networked PMUs** |  |  |
| **2** | **Number of networked PMUs** |  |  |
| **3** | **Number of substations with at least one networked PMU installed** |  |  |
| **4** | **Number of total substations** |  |  |

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| ***SCHEDULE 9. PART C. SMART GRID PMU APPLICATIONS*** | | |
|  | | |
| **LINE NO.** | **Application Type** | **Application Used** |
| **PMU APPLICATIONS** | | |
|  | **A. Real-time Operations Applications** | |
| **1** | **Indicate whether PMUs are being used to support the following applications:** | |
| **1a** | • **Wide-area situational awareness** | **[ ] Yes, [ ] No** |
| **1b** | • **Frequency stability monitoring and trending** | **[ ] Yes, [ ] No** |
| **1c** | • **Power oscillation monitoring** | **[ ] Yes, [ ] No** |
| **1d** | • **Voltage monitoring and trending** | **[ ] Yes, [ ] No** |
| **1e** | • **Alarming and setting system operating limits, event detection and avoidance** | **[ ] Yes, [ ] No** |
| **1f** | • **Resource integration** | **[ ] Yes, [ ] No** |
| **1g** | • **State estimation** | **[ ] Yes, [ ] No** |
| **1h** | • **Dynamic line ratings and congestion management** | **[ ] Yes, [ ] No** |
| **1i** | • **Outage restoration** | **[ ] Yes, [ ] No** |
| **1j** | • **Operations planning** | **[ ] Yes, [ ] No** |
| **1k** | • **Islanding detection, management, and restoration** | **[ ] Yes, [ ] No** |
| **1l** | • **Equipment problem detection** | **[ ] Yes, [ ] No** |
|  | **B. Planning and Off-line Applications** | |
| **2** | **Indicate whether PMUs are being used to support the following applications:** | |
| **2a** | • **Baselining power system performance** | **[ ] Yes, [ ] No** |
| **2b** | • **Event analysis** | **[ ] Yes, [ ] No** |
| **2c** | • **Static system model calibration and validation** | **[ ] Yes, [ ] No** |
| **2d** | • **Dynamic system model calibration and validation** | **[ ] Yes, [ ] No** |
| **2e** | • **Power plant model validation** | **[ ] Yes, [ ] No** |
| **2f** | • **Load characterization** | **[ ] Yes, [ ] No** |
| **2g** | • **Special protection schemes and islanding** | **[ ] Yes, [ ] No** |
| **2h** | • **Primary frequency (governing) response** | **[ ] Yes, [ ] No** |
| **2i** | • **Operator training** | **[ ] Yes, [ ] No** |

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| **SCHEDULE 10. COMMENTS** | | | | | | |
| **LINE NO.** | **Schedule**  **(A)** | **Schedule**  **Part**  **(B)** | **Schedule**  **Line No. (C)** | **Schedule**  **Column**  **(D)** | **Schedule**  **Page**  **(E)** | **Comment**  **(F)** |
| **1** |  |  |  |  |  |  |
| **2** |  |  |  |  |  |  |
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| **12** |  |  |  |  |  |  |
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