



Resource Adequacy Workbook Instruction Manual

10/1/2018

Southwest Power Pool Engineering

Revision History

Date or Version Number	Author	Change Description	Comments
5/25/2016	SPP Staff	Original Draft	
6/9/2016	SPP Staff and member edits	Version 2	Edits throughout document
6/21/2016	SPP Staff	Version 3	Inserted Responsible Entities and Timeline
10/20/2016	SPP Staff	Version 4	Edited document to be consistent with Workbook and draft Tariff language
11/15/2016	SPP Staff	Version 5	Inserted Deliverability Study Plant Mapping tab and edited wording consistent with Workbook
9/22/2017	SPP Staff	Version 6	Updated wording and calculations to reflect the latest version of the Workbook
10/1/2018	SPP Staff	Version 7	Updated wording and calculations to reflect the latest version of the Workbook and Attachment AA

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Overview

The purpose of this document is to provide guidance for completing for the Resource Adequacy Workbook (Workbook). The Workbook contains, but is not limited to, resource specific information, load forecasting methodology, purchases and sales information, modeling information, and load information for the previous, current, and future (10 years). The information submitted in the Workbook is used to validate the Resource Adequacy Requirement as outlined in Attachment AA of the SPP Tariff. It is also used to gather the data required by the Energy Information Association (EIA)-411 data request, mandated annually through the North American Energy Reliability Council (NERC).

All megawatt values in the Workbook should be reported to the tenth of a megawatt (0.1 MW) and all percentage values should be reported to the hundredths of a percentage (0.01 %).

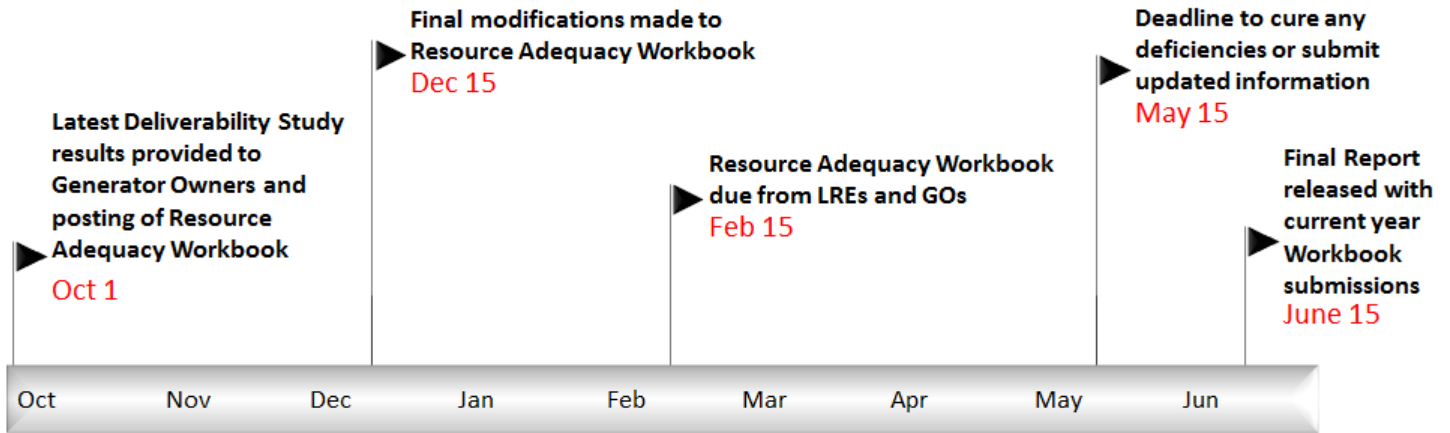
Responsible Entities

The required data is to be submitted by Market Participants (MPs), Load Responsible Entities (LREs) and/or Generator Owners (GOs). The following lists the entity and the associated information responsible for submission.

- **Market Participant and/or LRE only entity:** An LRE may be a Market Participant or can procure a third party Market Participant to represent it. The MP/LRE is responsible for submitting information contained in the Resource Adequacy Requirement, Purchases & Sales, Demand & Energy, Capacity Adjustments, Load Forecasting, Reported Entities, and Distributed Energy Resource tabs in the Workbook.
- **GO only entity:** Responsible for submitting information contained in the Resource Adequacy Requirement, Resource Summary, Purchases & Sales, and the Deliverability Study Results tabs in the Workbook.
- **LRE and GO entities:** Responsible for submitting information contained in all tabs of the Workbook.

Submission Timeline

The timeline shown represents the annual submission and review of the Resource Adequacy Requirement data.



Resource Adequacy Requirement

Reporting Entity Information

Reporting Entity: Entity name for the information reported in the Resource Adequacy Workbook.

Instructions
Enter the company or entity name submitting the Workbook information.

Contact Information: Contact information regarding the personnel submitting the Workbook information.

Instructions
Enter the name, email, and phone number for the personnel submitting the Workbook information.

PRM Identification: One of two values is displayed for the Planning Reserve Margin (PRM) identification field, either “Hydro Based Resources” or “Conventional Based Resources”. This is determined by identifying if the submitting entity contains 75% or greater hydro resources in their generation mix which would carries a 9.89% PRM. If an entity contains less than 75% hydro resources then that entity is to be identified as conventional based generation mix. The PRM of 12.0% would be imposed on the entities that are conventional based. The total generation mix is identified using capacity values from resources submitted in the Resource Summary tab.

Reporting Year: The year entered for the current reporting year. The reporting year is prepopulated prior to data request and does not require additional instructions.

Resource Adequacy Requirement Summary

Firm Capacity: The value for Firm Capacity as reflected in the Resource Adequacy Requirement Summary tab. This value is the total amount of capacity used in the calculation to meet the Resource Adequacy Requirement for the upcoming Capacity Year.

Net Peak Demand (Forecasted): The value for Net Peak Demand as reflected in the Resource Adequacy Requirement Summary tab. This value is the total amount of forecasted demand used in the calculation to meet the Resource Adequacy Requirement for the upcoming Capacity Year.

Planning Reserve Margin: The entity’s Planning Reserve Margin is calculated by subtracting the forecasted Net Peak Demand from the Firm Capacity and dividing the difference by the forecasted Net Peak Demand. The reflected reserve margin percentage is for the upcoming Summer Peak Season.

Resource Adequacy Requirement: The Resource Adequacy Requirement includes the minimum capacity required to meet the Net Peak Demand and the SPP PRM. The Resource Adequacy Requirement will be used to validate if the entity has met its Resource Adequacy Requirement for the upcoming Summer Peak Season.

Excess Capacity: The entity's Excess Capacity is calculated by subtracting the Firm Capacity from the Resource Adequacy Requirement. If the difference is negative the value will be reflected as zero.

Deficient Capacity: The entity's Excess Capacity is calculated by subtracting the Resource Adequacy Requirement from the Firm Capacity. If the difference is negative the value will be reflected as zero.

SPP Planning Reserve Margin (PRM) Requirement: The PRM is established by SPP to maintain in excess of an entity's Net Peak Demand by providing the sufficient capacity and demand requirements. The PRM for all entities is 12.0%. If the Firm Capacity amount for the reporting entity contains 75% or greater hydro resources in their generation mix, then the entity's PRM is 9.89%.

Firm Capacity Summary

Firm Capacity Resources: The Firm Capacity Resources calculation includes resources, in megawatts, used for Resource Adequacy Requirement validation and other calculations. The resources considered are derived from the Resource Summary tab and only include existing resources. Existing, behind the meter generation is also included from resources identified as behind the meter from the Resource Summary tab. The value reflected in the summary tab is for the upcoming Summer Peak Season.

Firm Capacity Purchases: The calculation, in megawatts, for firm purchases accounts for all capacity purchases internal and/or external to the SPP Balancing Authority (BA) with firm transmission service or purchases obtained through a Deliverability Study. These capacity purchases as submitted in the Purchases & Sales tab are applied to the total amount of Firm Capacity for the upcoming Summer Peak Season. Purchases external to the SPP BA require firm transmission service. All other internal purchases, unless achieved through the Deliverability Study process, must have firm transmission service as well.

External Firm Power Purchases: The calculation, in megawatts, for firm purchases accounts for all Firm Power purchases external to the SPP Balancing Authority (BA). These purchases as submitted in the Purchases & Sales tab are multiplied by the entity's Planning Reserve Margin and applied to the total amount of Firm Capacity for the upcoming Summer Peak Season. Internal Firm Power purchases are considered in the calculation for Net Peak Demand.

Firm Capacity Sales: The calculation, in megawatts, for firm sales accounts for all capacity sales internal and/or external to the SPP Balancing Authority (BA) with firm transmission service or sales obtained through a Deliverability Study. These capacity sales as submitted in the Purchases & Sales tab are applied to the total amount of Firm Capacity for the upcoming Summer Peak Season. Sales external to the SPP BA require firm transmission service. All other internal sales, unless achieved through the Deliverability Study process, must have firm transmission service as well.

External Firm Power Sales: The calculation, in megawatts, for firm purchases accounts for all Firm Power purchases external to the SPP Balancing Authority (BA). These purchases as submitted in the Purchases & Sales tab are multiplied by the entity's Planning Reserve Margin and applied to the total amount of Firm Capacity for the upcoming Summer Peak Season. Internal Firm Power sales are considered in the calculation for Net Peak Demand.

Confirmed Retirements: The "Confirmed Retirements" value includes resources with formalized announced plans to retire, such as the resource must have an approved generator deactivation request. The total is calculated, in megawatts, using summer capacity values from the Resource Summary tab which are

identified by having confirmed retirement dates before the upcoming summer season. The confirmed retirements located in the summary tab takes into consideration all resources retiring before the upcoming summer season. This value is used directly when calculating Firm Capacity. If a resource is being retired before any following year, it should be represented as zero Firm Capacity-summer and/or zero Firm Capacity-winter capacity for the appropriate years in the Resource Summary tab.

Scheduled Outages: Capacity projected to be unavailable during the summer season due to a scheduled outage. This value is derived from the Capacity Adjustments tab for the upcoming Summer Peak Season.

Transmission Limitations: Capacity projected to be unavailable due to transmission limitations caused by known physical deliverability limitations to serve load that the resources are obligated to serve. This value is derived from the Capacity Adjustments tab for the upcoming Summer Peak Season.

Other Capacity Adjustments – Additions: Other capacity adjustments to account for impacts not explicitly addressed in the Workbook. This value is derived from the Capacity Adjustments tab for the upcoming Summer Peak Season.

Other Capacity Adjustments – Reductions: Other capacity adjustments to account for impacts not explicitly addressed in the Workbook. This value is derived from the Capacity Adjustments tab for the upcoming Summer Peak Season.

Firm Capacity: The Firm Capacity calculation includes resources, in megawatts, used for validation and calculations. The values considered and the associated equation is as follows:

- Includes capacity, as reported for **Firm Capacity Resources** in the Resource Adequacy Requirement tab. The requirements for Firm Capacity-summer and Firm Capacity-winter capacity are described in the Resource Summary section below.
- Adds **Firm Capacity Purchases** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Adds **External Firm Power Purchases** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Subtracts **Firm Capacity Sales** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Subtracts **External Firm Power Sales** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Subtracts for **Confirmed Retirements** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Subtracts **Scheduled Outages** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Subtracts **Transmission Limitations** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Adds **Other Capacity Adjustments – Additions** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Subtracts **Other Capacity Adjustments – Reductions** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.

Peak Demand Summary

[Previous year] Peak Demand (Forecasted): Previous year’s forecast for Peak Demand

Instructions
Enter, in megawatts, the previous year forecasted Peak Demand for the previous Summer Peak Season.

[Previous year] Net Peak Demand (Forecasted): Previous year’s forecast for Net Peak Demand

Instructions
Enter, in megawatts, the previous year forecasted Net Peak Demand for the previous Summer Peak Season.

[Current year] Peak Demand (Forecasted): The Peak Demand, in megawatts, should reflect the forecasted highest demand including transmission losses for energy measured over a one clock hour period. Each entity shall provide annually to SPP a 11-year forecast of peak demand requirements. This information is to conform to SPP Resource Adequacy Requirements in conjunction with the NERC EIA-411 guidelines. The value reflected is derived from the Demand & Energy tab and the requirements for the demand reported are in the Peak Demand section below.

Firm Power Purchases: The calculation, in megawatts, for Firm Power purchases accounts for all purchases internal to the SPP BA with transmission service which are full responsibility contracts that the seller is contractually obligated to deliver capacity, energy, and planning reserves. The seller assumes the responsibility to maintain planning reserves for the contracted amount of demand. These purchases, as submitted in the Purchases & Sales tab, are applied to the Net Peak Demand for the upcoming Summer Peak Season.

Firm Power Sales: The calculation, in megawatts, for Firm Power sales accounts for all sales internal to the SPP BA with transmission service which are full responsibility contracts that the seller is contractually obligated to deliver capacity, energy, and planning reserves. The seller assumes the responsibility to maintain planning reserves for the contracted amount of demand. These sales, as submitted in the Purchases & Sales tab, are applied to the Net Peak Demand for the upcoming Summer Peak Season.

Controllable and Dispatchable Demand Response – Available: The projected impact of any activities or programs that are directly controlled or dispatched by the SPP or entity System Operator to influence the amount electricity used during the peak hour. This value is derived from the Demand & Energy tab for the upcoming Summer Peak Season. Each entity should provide written documentation to SPP in the Distributed Energy Resource tab with the amount and type of demand resource along with the procedures for achieving the demand reduction. Entities must ensure that the reported amount of demand reduction aligns with the current state’s accreditation procedures for a demand resource programs.

Other Controllable and Dispatchable Distributed Energy Generation – Available: Generation located close to the particular load which it is intended to serve. General, but nonexclusive, characteristics of these generators include: an operating strategy that supports the served load; and interconnection to a distribution or sub-transmission system (138 kV or less). This should include any “Behind the Meter” generation, “Net-Metered” generation, or dispatchable load modifying resources not reported as capacity side resources and not include back-up generation that supports unserved load. The value reflected is derived from the

Demand & Energy tab and the requirements for the demand reported are in the Demand-Side Management section below.

[Current year] Net Peak Demand (Forecasted): This value is automatically calculated, in megawatts, by reducing Peak Demand by the associated equation as follows:

- Includes **Peak Demand** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Subtracts **Firm Power Purchases** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Adds **Firm Power Sales** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Subtracts **Controllable and Dispatchable Demand Response – Available** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.
- Subtracts **Other Controllable and Dispatchable Distributed Energy Generation – Available** as reported for the upcoming Summer Peak Season in the Resource Adequacy Requirement tab.

Energy Efficiency and Conservation (*Informational Only*): Conservation is a reduction in energy consumption that corresponds with a reduction in service demand. This data is being reported for informational purposes, as Peak Demand should already be reduced by the impacts of these programs. The value reflected is derived from the Demand & Energy tab and the requirements for the demand reported are in the Demand-Side Management section below.

Stand-by Load under Contract (*Informational Only*): Demand which is normally served by behind the meter generation which has a contract to provide power if the generator becomes unavailable. This data is being reported for informational purposes, as Peak Demand should already be reduced by the impacts of these programs. The value reflected is derived from the Demand & Energy tab and the requirements for the demand reported are in the Demand-Side Management section below.

Resource Summary

Resources in the Resource Summary tab should include, but not limited to:

- SPP accredited resources owned or under contract for firm capacity with firm transmission service to serve Peak Demand obligations
- Resource classified as a Designated Network Resource
- SPP accredited resource with adequate deliverability (as studied by SPP using the annual Deliverability Study process) under contract for firm capacity to serve PRM obligations. Such capacity contracts apply to resources registered in the SPP Integrated Marketplace and can only be used to meet the PRM above an entity's Peak Demand.

Ownership Information

Description / Instructions
The Resource Summary tab should include all generating resources over one megawatt located within the SPP BA at the time of data collection. The list of resources in the Resource Summary tab consists of resources fully or partially owned by the reporting entity.

<p>Status</p>	<p>Select one of the following options based on resource status at the time of reporting:</p> <ul style="list-style-type: none"> A. Existing - in commercial operation B. Retired - permanently removed from commercial operation C. Mothballed – currently inactive or on standby, but capable for return to commercial operation. Resources that meet this status must have a definite plan to return to service before changing the status to “Existing” with capacity contributions entered in the “Firm Capacity Other” columns. Once a “mothballed” resource is confirmed to be capable for commercial operation, capacity contributions should be entered in the “Firm Capacity” columns. D. Cancelled – planned resource (previously reported as Tier 1, 2, or 3) that has been cancelled/removed from an interconnection queue E. Tier 1 – resource that meets <u>at least one</u> of the following requirements¹: <ul style="list-style-type: none"> a) Construction complete (not in commercial operation) b) Under construction c) Signed/approved Interconnection Service Agreement (ISA) d) Signed/approved Interconnection Construction Service Agreement (CSA) e) Signed/approved Wholesale Market Participant Agreement (WMPA) f) Included in an integrated resource plan or under a regulatory environment that mandates a resource adequacy requirement (Applies to Vertically Integrated Entities) F. Tier 2 – resource that meets <u>at least one</u> of the following requirements: <ul style="list-style-type: none"> a) Signed/approved Completion of a feasibility study b) Signed/approved Completion of a system impact study c) Signed/approved Completion of a facilities study d) Requested Interconnection Service Agreement e) Included in an integrated resource plan or under a regulatory environment that mandates a resource adequacy requirement (Applies to RTOs/ISOs)
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¹ AESO: Project has completed Stage 4: the Alberta Utilities Commission (AUC) has issued a Permit and License (AESO-specific)

	G. Tier 3 – resources in an interconnection queue that do not meet the Tier 2 requirement
Country	Select the country where the resource is physically located: A. CA - Canada B. MX - Mexico C. US - United States
State	Select the state where the resource is physically located: A. Alabama ... XX. Wyoming
Ownership Company	Enter the company name who owns the resource
Percentage Owned	Enter the percentage owned by the Ownership Company

Resource Identification

Description / Instructions	
NERC Unit ID	Utilize the NERC assigned unique ID for resources
Plant Code	Utilize the EIA-860 Plant Code given for US resources
Generator ID – 1	The unique generator identification commonly used by plant management. Generator identification can have a maximum of four characters. Utilize the EIA-860 Generator ID given for US resources
Generator ID – 2	Assessment area or Regional Entity Generator ID. <i>(Optional)</i>
Plant Name – 1	Utilize the EIA-860 Plant Name given for US resources
Plane Name – 2	Assessment area or Regional Entity Plant Name. <i>(Optional)</i>
Behind the Meter	Select one of the following options to identify if a resource is considered Behind the Meter generation: A. Yes B. No

Resource Fuel Information

Description / Instructions	
Prime Mover	For combined cycle resources, a prime mover code must be entered for each generator. Utilize the EIA-860 Prime Mover identifiers located in Appendix I.
Energy Source – 1	The energy source code for the fuel used in the largest quantity (Btu’s) to power the generator. Utilize the EIA-860 Predominant Energy Source identifiers located in Appendix I.
Energy Source – 2	The energy source code for the fuel used in the second largest quantity (Btu’s) to power the generator. Utilize the EIA-860 Predominant Energy Source identifiers located in Appendix I. For resources with no secondary energy source, leave this field blank.
Generation Type	Automatically populated, based on the Prime Mover and Energy Source – 1.

Operating Information

Description / Instructions	
Initial Operating Month-Year	For existing resources, provide the month and year of the original effective date that the resource became operational (EIA operating year should be used for all resources within the US). For planned resources (Tier 1-3), enter the month and year the resource is projected to become operational.
Confirmed Retirement Month-Year	Only provide for resources with formalized announced plans to retire; where applicable, the resource must have an approved generator deactivation request. For resources that meet these requirements, enter the month and year of the resource’s confirmed retirement date.
Unconfirmed Retirement Month-Year	Only provide for resources that have been earmarked for retirement; For resources that meet these requirements, enter the month and year of the resource’s projected retirement date. Examples include: <ul style="list-style-type: none"> • Reliability, must run status and other issues may conflict with this proposed/requested retirement or conversion. • Resources that have submitted a request for a generator deactivation request, but have not received approval. • Resources expected to retire based on the result of a generator survey or resource adequacy study.
Testing Capacity Date Month-Year	For existing resources, provide the month and year the resource was last tested for its generating capability.
Gross Testing Capacity (MW)	For existing resources, provide the gross capacity the resource was last tested for its generating capability.
Market Registration	Select one of the following options to identify if the resource is registered in any energy market: <ul style="list-style-type: none"> A. SPP (<i>Southwest Power Pool</i>) B. MISO (<i>Midcontinent Independent System Operator</i>) C. ERCOT (<i>Electric Reliability Council of Texas</i>) D. Multiple* E. Not Registered F. Unknown <p>*If the resource is registered in multiple markets, please list the markets in the comments section located in the Resource Summary tab to the right of the “Firm Capacity Other – Winter” section.</p>

Capacity Amount

Description / Instructions	
Nameplate Capacity	The highest value of nameplate capacity, in megawatts, for the resource as measured in alternating current (AC). The EIA-860 nameplate capacity should be used utilized for resources within the US.
Summer Capacity	Generator net summer capacity for the primary energy source of the resource; report in alternating current (AC) megawatts. The EIA-860 summer capacity or SPP accredited capacity can be used for all resources within the US. For the SPP accredited capacity, report the latest available net summer capacity.
Winter Capacity	Generator net winter capacity for the primary energy source; report in alternating current (AC) megawatts. The EIA-860 summer capacity or SPP accredited capacity can be used for all resources within the US. For the SPP accredited capacity, report the latest available net winter capacity.

Firm Capacity (Summer or Winter): Included in this category are commercially operable generating resources, or portions of generating resources, that are SPP accredited resources either fully or partially owned by the entity submitting the resource information. Resources submitted in the Resource summary tab can also be used to serve Peak Demand obligations with firm transmission service or classified as a Designated Network Resource that is owned by the submitting entity.

Instructions	
Summer/Winter Years 1-11	For existing capacity and capacity additions (Tier 1-3) that meet the requirements of Firm Capacity, provide the amount of capacity (in megawatts) projected to be available during the peak hour for the summer and winter of each year. Values for each season/year should be provided in the appropriate columns and reflect capacity adjustments for the following impacts: uprates or derates. Firm Capacity in the Resource Summary tab should not reflect reductions for Confirmed or Unconfirmed Retirements.

Firm Capacity (Other) - (Summer or Winter): Included in this category are commercially operable generating resources, or portions of generating resources, that are expected to be available to serve load for the period of peak demand for each season/year of the assessment period, but do not meet the requirements of Firm Capacity. Resources must be SPP accredited resources either fully or partially owned by the entity submitting the resource information.

Instructions	
Years 1-11	<p>For existing capacity, and capacity additions (Tier 1-3) that do not meet at least one of the requirements of Firm Capacity, provide the amount of capacity, in megawatts, projected to be available during the peak hour for the summer and winter of each year. Values for each season/year should be provided in the appropriate columns and reflect capacity adjustments for the following impacts: up-rates or de-rates. Firm Capacity (Other) in the Resource Summary tab should not reflect reductions for Confirmed or Unconfirmed Retirements.</p>

Purchases and Sales (Transactions)

Transaction Information

Reference to SPP Balancing Authority Area: Identifies a purchase or a sale of capacity in or out of the SPP Balancing Authority to another entity. *(Transactions with Southwest Power Administration (SPA) should be listed as internal transactions.)*

Instructions
Select one of the following options to identify the type of transaction in reference to the SPP BA: A. Internal B. External

Purchase/Sale: This field identifies the type of transaction. If the capacity transaction is a purchase, it is an import of capacity to from another entity outside the entity’s reported Peak Demand and/or owned generation boundary. If the capacity transaction is a sale, it is an export of capacity to another entity outside the entity’s reported Peak Demand and/or owned generation boundary.

Instructions
Select one of the following options to identify the type of transaction: A. Purchase B. Sale

Transaction Type: Identifies the type of the submitted transaction.

Description / Instructions
Select one of the following options based on the type of the transaction: A. Firm Power - A Firm Power transaction is a firm agreement for which the seller is contractually obligated to deliver capacity, energy, and planning reserves to the purchaser with the same degree of reliability as provided to the seller’s own native load customers plus planning reserves. A Firm Power agreement will be applied as a load adjustment for internal and external transactions in which the seller assumes the obligation of planning reserves for the contracted amount of load. A Deliverability Study contract cannot be considered as a Firm Power agreement and must only be considered as a Firm Capacity transaction. Firm transmission service is required for Firm Power arrangements. B. Firm Capacity – A Firm Capacity agreement is an agreement for which the seller is contractually obligated to deliver capacity to the purchaser up to the contract amount. A Firm Capacity arrangement is applied as a capacity adjustment and the purchaser is still held responsible for the planning reserves of the demand being served by the contracted amount of capacity. Firm transmission service is required for Firm Capacity agreements unless obtained through a Deliverability Study analysis. The Deliverability Study option only applies to agreements with resources internal to the SPP BA.

Transaction Description: Identifies the description of the submitted transaction.

Description / Instructions
<p>Select one of the following options based on the type and status of the transaction:</p> <ul style="list-style-type: none"> A. Existing Power Purchase Agreement - Identifies the status and description of the transaction. Existing transactions would include any signed or approved Power purchase agreement (PPA). B. Expected - Tier 1 – Projected transactions with a high expectation that a Firm Capacity or Firm Power contract will be executed but has not been finalized or approved. C. Expected - Tier 2 – Projected transactions of Firm Capacity or Firm Power with a request for an agreement contract. Tier 2 transactions should include any contracts in the beginning stages of an approval process. D. Expected - Tier 3 – Projected transactions with a lower expectation than Tier 2 that a Firm Capacity or Firm Power contract will be executed. Tier 3 transactions should include any contracts that are conceptual and the effective date would be greater than 3 years from the current reporting year.

From/To Entity:

Instructions
Select a from or to entity option who the contract is from or to. A full list of entities can be found in Appendix II: List of Entities.

Additional Transaction Information:

Instructions
Enter any additional information about the transaction such as city, location, peaking/seasonal, etc.

Resource Specific or Fleet based transaction:

Instructions
<p>Select one of the following options based on additional information of the transaction. The information will be included in the Firm Capacity amount to determine the reporting entity’s Planning Reserve Margin (12.0% or 9.89%).</p> <ul style="list-style-type: none"> A. Fleet Transaction – A Firm Power or Firm Capacity transaction from a fleet of resources B. Resource Specific – A Firm Power or Firm Capacity transaction from a specific resource

Fuel Type of Resource or Fuel mix of fleet:

Instructions
<p>Select one of the following options based on additional information of the transaction. The information will be included in the Firm Capacity amount to determine the reporting entity's Planning Reserve Margin (12.0% or 9.89%).</p> <p>A. If the transaction is a fleet based transaction, select one of the following. If the capacity transaction is from a combination of conventional and hydro resources, select the option for which the majority of the capacity is being supplied.</p> <ul style="list-style-type: none"> a. Conventional Based – A conventional based transaction includes coal, petroleum, natural and other gases, biomass, wind, solar, geothermal, or any other conventional resources b. Hydro Based – A hydro based transaction includes pump storage, conventional hydro, or any other hydro resources <p>B. If the transaction is a resource specific transaction, select one of the following:</p> <ul style="list-style-type: none"> a. Coal b. Petroleum c. Natural Gas and Other Gases d. Nuclear e. Biomass f. Wind g. Solar h. Geothermal i. Hydro

Season: Identifies the season of the submitted transaction. Summer and winter season transactions must be submitted in the Purchases & Sales tab.

Instructions
<p>Select one of the following options to identify the season of the transaction:</p> <p>A. Summer - The summer season is identified as June 1 to September 30.</p> <p>B. Winter – The winter season is identified as December 1 to March 31.</p> <p>C. Yearly – The transaction is for both the Summer and Winter seasons.</p>

Status: Identifies the status of the transaction. The status field is automatically populated once the description of the transaction has been selected. The four options include Existing, Tier 1, Tier 2, and Tier 3.

Purchases and Sales Capacity Values

Instructions
<p>Enter, in megawatts, the contracted amount of the transaction. If a transaction is obtained through a Deliverability Study, enter the amount of contracted capacity.</p>

Transmission Service Information

Deliverability Study Contract:

Instructions
Select one of the following options to identify if the agreement was obtained through a Deliverability Study Analysis: A. No - Indicates the transaction was not obtained through the Deliverability Study process and has firm transmission service. B. Yes – Indicates the transaction was obtained through the Deliverability Study process and does not require firm transmission service. Deliverability Study transactions can only be applied to the summer season and be obtained for up to two consecutive summer seasons.

Start Date:

Instructions
Enter the start date of the transaction. Include the month, day, and year.

End Date:

Instructions
Enter the projected end date of the transaction. Include the month, day, and year.

OASIS Reservation Number:

Instructions
Enter, if applicable, the OASIS Reservation Number of the transaction. If firm transmission service is acquired, the reservation number should be provided. If a Deliverability Study contract is in place then the reservation number is not applicable.

Source Name Identifier:

Instructions
Enter, if available, the source specific identifier which is located in the transmission service request.

Comments

Instructions
Enter, if applicable, any additional comments about the submitted information.

Demand and Energy

Net Energy for Load

Actual: The electric energy requirements of each entity, which is defined as the entity’s net generation plus energy received from others less energy delivered to others. It includes the entity’s losses but excludes energy required for the filling of reservoirs at pumped-storage plants.

Instructions	
Prior Year Actual	Enter the actual Net Energy for Load, in gigawatt-hours, for each month of the prior reporting year.

Forecasted: The amount of energy required by the reported utility or group of utilities' retail customers in the entity's service area plus the amount of energy supplied to full and partial requirements utilities (wholesale requirements customers) plus the amount of energy losses incurred from both transmission and distribution.

Instructions	
Reporting Year Forecast	Enter the Net Energy for Load forecast, in gigawatt-hours, for each month of the current Reporting Year.
Year 1 Forecast	Enter the Net Energy for Load forecast, in gigawatt-hours, for each month of one year after the current report year.
Year 2-10 Forecast	Enter the Net Energy for Load forecast, in gigawatt-hours, for 2-10 years after the current reporting year.

Peak Demand

Actual: Expressed in megawatts, the highest demand for electricity (based on Net Energy for Load) averaged over one clock hour. Actual peak hour demand should be provided on an entity’s greatest Peak Demand within the reported entity’s boundaries.

Instructions	
Prior Year Actual	Enter the actual Peak Hour Demand for each month of the Prior Year.

Peak Demand (Forecasted): Peak Demand (Forecasted) should reflect the forecasted highest demand including transmission losses for energy measured over a one clock hour period. Each entity shall provide annually to SPP a 11-year forecast of peak demand requirements. The forecasted demand information will be used to validate requirements listed in Attachment AA of the SPP Tariff and meet NERC EIA-411 submission guidelines. The forecasts provided shall be produced in accordance with generally recognized methodologies and also in accordance with the following principles.

- a. Each entity shall select its own load forecasting methodology and establish its own load forecast based on a 50/50 forecast
- b. The station service or auxiliary loads (such as fan motors, pump motors, and other equipment essential to the operation of the generating resources) are not included, unless served as retail load at the time of peak

- c. Peak Demand shall be reduced by indirect demand-side management programs such as conservation programs, improvements in efficiency of electric energy use, Stand-by Load under Contract, all non-controllable or non-dispatchable demand response programs (such as Time-of-Use, Critical Peak Pricing, Real Time Pricing and System Peak Response Transmission Tariffs).
- d. Peak Demand shall not be reduced by the projected impacts of Controllable and Dispatchable Demand Response programs. Such reductions are accounted for in the Net Peak Demand calculation.
- e. Forecasts provided should consider, but not be limited to, historical weather conditions, economic conditions, and expected load uncertainty due to historical load patterns
- f. The forecasted Peak Demand values shall include system transmission losses
- g. Method used, factors considered and assumptions made shall be submitted along with the forecast in the Workbook
- h. The forecasted peak demand should align with the Market Participant/Load Asset Owner relationship as defined in the SPP Integrated Marketplace.

Instructions	
Reporting Year Forecast	Enter the forecasted Peak Demand for each month of the Reporting Year.
Year 1 Forecast	Enter the forecasted Peak Demand, in megawatts, for each month of one year after the current report year.
Year 2 Forecast	Enter the forecasted Peak Demand of January and February for the second year after the current reporting year.
Year 2-10 Forecast	Enter the forecasted Peak Demand, in megawatts, for 2-11 years after the current reporting year.

Demand-Side Management

Controllable and Dispatchable Demand Response: The projected impact of any demand response programs that are directly controlled or dispatched by the SPP or entity System Operator to influence the amount electricity used during the peak hour. Each entity should provide written documentation to SPP in the Distributed Energy Resource tab with the amount and type of demand resource along with the procedures for achieving the demand reduction. Entities must ensure that the reported amount of demand reduction aligns with the current state’s accreditation procedures for a demand resource programs.

Instructions	
Program Total	Enter, in megawatts, the projected amount of enrolled (i.e. installed, registered) Controllable and Dispatchable Demand Response programs. This should consider current participants registered in these programs, as well as the projected growth of these programs during the assessment period.
Available	Enter, in megawatts, the projected impacts of Controllable and Dispatchable Demand Response programs. This should consider the projected quantity of reduced electrical consumption during the forecasted Peak Demand.

Other Controllable and Dispatchable Distributed Energy Generation: Generation located close to the particular load which it is intended to serve. General, but nonexclusive, characteristics of these generators include: an operating strategy that supports the served load; and interconnection to a distribution or sub-

transmission system (138 kV or less). This should include any “Behind the Meter” generation less than 10 megawatts, “Net-Metered” generation, or dispatchable load modifying resources not reported as capacity side resources and not include back-up generation that supports unserved load.

Instructions	
Program Total	Report, in megawatts, the best estimation for the total amount of installed Controllable and Dispatchable Distributed Energy Generation.
Available	Report, in megawatts, the available amount of installed Controllable and Dispatchable Distributed Energy Generation.

Energy Efficiency and Conservation (*Informational Only*): Conservation is a reduction in energy consumption that corresponds with a reduction in service demand. Service demand can include buildings-sector end uses such as lighting, refrigeration, and heating; industrial processes; or vehicle transportation. Unlike energy efficiency, which is typically a technological measure, conservation is better associated with behavior. Examples of conservation include adjusting the thermostat to reduce the output of a heating unit, using occupancy sensors that turn off lights or appliances, and car-pooling. [Source: DOE-EIA]

Energy Efficiency refers to programs that are aimed at reducing the energy used by specific end-use devices and systems, typically without affecting the services provided. These programs reduce overall electricity consumption, often without explicit consideration for the timing of program-induced savings. Such savings are generally achieved by substituting technologically more advanced equipment to produce the same level of end-use services (e.g. lighting, heating, motor drive) with less electricity. Examples include high-efficiency appliances, efficient lighting programs, high-efficiency heating, ventilating and air conditioning (HVAC) systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems. [Source: DOE-EIA]

Instructions										
Enter the combined impacts of energy efficiency and conservation programs that impact load growth beyond its natural or normal rate. Impacts should be reported on a cumulative basis, starting with the expected impacts in 2018. This data is being reported for informational purposes, as Peak Demand should already be reduced by the impacts of these programs.										
Example 1										
Energy efficiency Program A introduced any time prior to the reporting period (with continued impacts on electricity usage) with an estimated 10 MW reduction per year should be reported as follows:										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Energy Efficiency and Conservation	10	20	30	40	50	60	70	80	90	100
Example 2										
In addition to Program A, energy efficiency Program B will be introduced in Year 5 with an estimate reduction of 100 MW in the Years 5-7, and a 50 MW reduction in Years 8-10 should be reported as follows:										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Energy Efficiency and Conservation	10	20	30	40	150	260	370	430	490	550

Stand-by Load under Contract (*Informational Only*): demand which is normally served by behind the meter generation which has a contract to provide power if the generator becomes unavailable. This data is being reported for informational purposes, as Peak Demand should already be reduced by the impacts of these programs.

Instructions
Enter, in megawatts, the expected demand at time of system peak required to provide power and energy (under a contract with a customer as a secondary source or backup for an outage of the customer’s primary source).

Comments

Instructions
Enter, if applicable, any additional comments about the submitted information.

Capacity Adjustments

Other Capacity Adjustments – Additions: Other capacity adjustments to account for impacts not explicitly addressed in the Workbook.

Instructions
Enter, in megawatts, the aggregated capacity adjustments to be added to the total amount of Firm Capacity. A comment must be provided to explain the use of these fields.

Other Capacity Adjustments – Reductions: Other capacity adjustments to account for impacts not explicitly addressed in the Workbook.

Instructions
Enter, in megawatts, the aggregated capacity adjustments to be added to the total amount of Firm Capacity. A comment must be provided to explain the use of these fields.

Scheduled Outages: Capacity projected to be unavailable during the summer season due to a scheduled outage.

Instructions
Enter, in megawatts, the aggregated amount of capacity projected to be unavailable due to a scheduled outage during the peak for the upcoming summer season. Do not include scheduled outages that are reflected by reducing the submitted capacity on a resource-level-basis in the Resource Summary tab.

Transmission Limitations: Capacity projected to be unavailable due to transmission limitations caused by known physical deliverability limitations to serve load that the resources are obligated to serve.

Instructions
Enter, in megawatts, the aggregated amount of capacity projected to be unavailable due to transmission limitations during the peak for the upcoming summer season. Do not include transmission limitations that are reflected by reducing the submitted capacity on a resource-level-basis in the Resource Summary tab.

Comments

Instructions
Enter, if applicable, any additional comments about the submitted information.

Ten Year Forecast Overview

The ten year forecast overview tables include basic formulae that are intended to provide data submitters with metrics, including demand, demand-side management, capacity, transactions, and capacity excess or deficiencies based on planning reserve margin requirements. Information and clarification on each category is provided below. Data submitters should refrain from modifying these formulae and contact SPP staff with any questions. All values reflect both summer and winter seasons and do not require additional instructions for data insertion.

Yearly Demand Summary

All values are sourced from the Demand & Energy tab except the Net Firm Power Transactions which are derived from the Purchases & Sales tab. Both summer and winter values are reflected. Net Peak Demand is calculated, in megawatts, for each applicable season and year by reducing Peak Demand by the associated equation as follows:

- Includes **Peak Demand**
- Subtracts **Internal Firm Power Purchases**
- Adds **Internal Firm Power Sales**
- Subtracts **Controllable and Dispatchable Demand Response – Available**
- Subtracts **Other Controllable and Dispatchable Distributed Energy Generation – Available**

Yearly Capacity Summary

All values are sourced from the Resource Summary, Purchases & Sales, and Capacity Adjustments tabs. Both summer and winter values are reflected. The Firm Capacity calculation includes resources, in megawatts, for each applicable season and year. The values considered and the associated equation is as follows:

- Includes capacity, as reported for **Firm Capacity Resources** in the Resource Summary tab. The requirements for Firm Capacity-summer and Firm Capacity-winter capacities are described in the Resource Summary section.
- Adds **Firm Capacity Purchases** as reported in the Purchases & Sales tab.
- Adds **External Firm Power Purchases** as reported in the Purchases & Sales tab.
- Subtracts **Firm Capacity Sales** as reported in the Purchases & Sales tab.
- Subtracts **External Firm Power Sales** as reported in the Purchases & Sales tab.
- Subtracts for **Confirmed Retirements** as reported in the Resource Summary tab.
- Subtracts **Scheduled Outages** as reported in the Capacity Adjustments tab.
- Subtracts **Transmission Limitations** as reported in the Capacity Adjustments tab.
- Adds **Other Capacity Adjustments – Additions** as reported in the Capacity Adjustments tab.
- Subtracts **Other Capacity Adjustments – Reductions** as reported in the Capacity Adjustments tab.

Additions-Tier 1: Includes on-peak capacity, as reported for Firm Capacity-Summer and Firm Capacity-Winter in the Resource Summary tab for resources with a status of “Tier 1” and the Firm Capacity

transactions in the Purchases & Sales tab for transactions with a status of “Tier 1”. The calculation also includes Tier 1 Firm Capacity and external Firm Power transactions.

Additions-Tier 2: Includes on-peak capacity, as reported for Firm Capacity-Summer and Firm Capacity-Winter in the Resource Summary tab for resources with a status of “Tier 2” and the Firm Capacity transactions in the Purchases & Sales tab for transactions with a status of “Tier 2”. The calculation also includes Tier 2 Firm Capacity and external Firm Power transactions.

Additions-Tier 3: Includes on-peak capacity, as reported for Firm Capacity-Summer and Firm Capacity-Winter in the Resource Summary tab for resources with a status of “Tier 3” and the Firm Capacity transactions in the Purchases & Sales tab for transactions with a status of “Tier 3”. The calculation also includes Tier 3 Firm Capacity and external Firm Power transactions. Tier 3 capacity additions will be collected for informational purposes

Yearly Reserve Margin Summary

Resource Categories

Firm Capacity: Includes the forecasted Firm Capacity for each applicable year.

Anticipated Firm Capacity: Includes Firm Capacity, plus Tier 1 Firm Capacity additions.

Prospective Firm Capacity: Includes Anticipated Resources, plus Tier 2 Firm Capacity additions, minus Unconfirmed Retirements

Planning Reserve Margins

Planning Reserve Margin: Calculated by subtracting the forecasted Net Peak Demand by the Firm Capacity, then dividing the amount by the Net Peak Demand for each applicable year

Anticipated Planning Reserve Margin: Calculated by subtracting the forecasted Net Peak Demand by the Anticipated Firm Capacity, then dividing the amount by the Net Peak Demand for each applicable year

Prospective Planning Reserve Margin: Calculated by subtracting the forecasted Net Peak Demand by the Prospective Firm Capacity, then dividing the amount by the Net Peak Demand for each applicable year

Excess/Deficient Capacity

Excess Capacity: provides a positive value, in megawatts, for each season and year for how much capacity is available to meet the Resource Adequacy Requirement, beyond what already projected for Firm Capacity. If the projected Firm Capacity is less than the Resource Adequacy Requirement then the LRE Excess Capacity value will be reflected as zero.

Deficient Capacity: provides a negative value, in megawatts, for each season and year for how much capacity is needed to maintain the Resource Adequacy Requirement, beyond what already projected for Firm Capacity. If the projected Firm Capacity is greater than or equal to the Resource Adequacy Requirement then the LRE Deficient Capacity value will be reflected as zero.

Anticipated Excess/Deficient Capacity

- Deficient: provides a negative value, in megawatts, for each season and year for how much capacity is needed to maintain the Resource Adequacy Requirement, beyond what already projected for Anticipated Firm Capacity.
- Excess: provides a positive value, in megawatts, for each season and year for how much capacity is available to meet the Resource Adequacy Requirement, beyond what already projected for Anticipated Firm Capacity.

Prospective Excess/Deficient Capacity

- Deficient: provides a negative value, in megawatts, for each season and year for how much capacity is needed to maintain the Resource Adequacy Requirement, beyond what already projected for Prospective Firm Capacity.
- Excess: provides a positive value, in megawatts, for each season and year for how much capacity is available to meet the Resource Adequacy Requirement, beyond what already projected for Prospective Firm Capacity.

Resource Adequacy Requirement: The Resource Adequacy Requirement includes the minimum capacity required to meet the Net Peak Demand and the SPP PRM.

SPP Planning Reserve Margin (PRM) Requirement: The PRM is established by SPP to maintain in excess of an entity's Net Peak Demand by providing the sufficient capacity and demand requirements. The PRM for all entities is 12.0%. If the Firm Capacity amount for the reporting entity contains 75% or greater hydro resources in their generation mix, then the entity's PRM is 9.89%.

Deliverability Study Results

The Deliverability Study Results tab contains the plant name and the associated deliverable capacity as provided by SPP.

The accredited capacity for each plant is provided by the Generator Owner(s) which is the current accredited amount of capacity for the entire plant. The Ownership Percentage for each plant is provided by the Generator Owner(s) and represents the percent ownership share of the plant.

The committed firm capacity for each plant is determined by the Generation Owner(s) which considers, but not limited to, capacity for serving network load, long term firm contracts, and short term firm contracts. The Contracted Deliverable Capacity amount for each plant is determined by the Generation Owner(s) and reflects the total amount of contracted Deliverable Capacity from each plant.

The available capacity for each plant is calculated by subtracting the committed firm capacity amount and the deliverability study contracted capacity amount from the deliverable capacity amount studied in the latest Deliverability Study.

Instructions
Enter, in megawatts, the accredited capacity, Ownership percentage, Committed Firm Capacity, and the Contracted Deliverable capacity for each plant to arrive at an Available Deliverable Capacity value.
For Deliverability Study contracts that are fleet based, please enter the amount of all fleet based transactions in the field labeled “Amount of Deliverable Capacity Contracted from Resource Fleet”. The Total amount of Available Deliverable Capacity and the Total amount of Contracted Deliverable Capacity at the top of the tab will take into consideration plant and fleet based Deliverability Study contracts.

Comments

Instructions
Enter, if applicable, any additional comments about the submitted information.

Load Forecasting Methodology

The load forecasting tab provides an overview of the current load forecasting methods used for the forecasted Peak Demand submissions in the Workbook. The information provided is for SPP informational purposes.

Instructions

Describe the forecasting methods in as much detail as possible. Assumptions, methods, and the manner in which uncertainties are treated in the forecasts of Peak Demand and Net Energy for Load should be addressed. Explain how demand response, energy efficiency, behind the meter generation, and stand-by load under contract are reflected in the load forecast.
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Reported Entities

Reported Entities:

Instructions
Select the entity(s) which the submitting entity is submitting on behalf of. A full list of entities can be found in Appendix II: List of Entities.

Appendix I: Resource Type and Fuel Codes

Prime Mover Codes

Code	Term
BA	Energy Storage, Battery
CE	Energy Storage, Compressed Air
CP	Energy Storage, Concentrated Solar Power
FW	Energy Storage, Flywheel
PS	Energy Storage, Reversible Hydraulic Turbine (Pumped Storage)
ES	Energy Storage, Other (specify in comments section)
ST	Steam Turbine, including nuclear, geothermal and solar steam (does not include combined cycle)
GT	Combustion (Gas) Turbine (includes jet engine design)
IC	Internal Combustion Engine (diesel, piston, reciprocating)
CA	Combined Cycle Steam Part
CT	Combined Cycle Combustion Turbine Part (type of coal or solid must be reported as energy source for integrated coal gasification)
CS	Combined Cycle Single Shaft (combustion turbine and steam turbine share a single generator)
CC	Combined Cycle Total Resource (use only for plants/generators in planning stages, for which specific generator details cannot be provided)
HA	Hydrokinetic, Axial Flow Turbine
HB	Hydrokinetic, Wave Buoy
HK	Hydrokinetic, Other (specify in comments section)
HY	Hydroelectric Turbine (includes turbines associated with delivery of water by pipeline)
BT	Turbines Used in a Binary Cycle (including those used for geothermal applications)
PV	Photovoltaic
WT	Wind Turbine, Onshore
WS	Wind Turbine, Offshore
FC	Fuel Cell
OT	Other/Unknown (specify in comments section)

Energy Source Codes

Fuel Type	Code	Fuel Description	
Fossil Fuels	Coal	ANT	Anthracite Coal
		BIT	Bituminous Coal
		LIG	Lignite Coal
		SGC	Coal-Derived Synthesis Gas
		SUB	Subbituminous Coal
		WC	Waste/Other Coal (including anthracite culm, bituminous gob, fine coal, lignite waste, waste coal)

	Petroleum Products	RC	Refined Coal
		DFO	Distillate Fuel Oil. Including Diesel, No. 1, No. 2, and No. 4 Fuel Oils
		JF	Jet Fuel
		KER	Kerosene
		PC	Petroleum Coke
		PG	Gaseous Propane
		RFO	Residual Fuel Oil (including No. 5, and No. 6 fuel oils, and bunker C fuel oil)
		SGP	Synthesis Gas from Petroleum Coke
		WO	Waste/Other Oil (including crude oil, liquid butane, liquid propane, naphtha, oil waste, re-refined motor oil, sludge oil, tar oil, or other petroleum-based liquid wastes)
	Natural Gas and Other Gases	BFG	Blast Furnace Gas
		NG	Natural Gas
		OG	Other Gas (specify in comments section)
	Renewable Fuels	Solid Renewable Fuels	AB
MSW			Municipal Solid Waste
OBS			Other Biomass Solids (specify in comment section)
WDS			Wood/Wood Waste Solids (including paper pellets, railroad ties, utility poles, wood chips, bark, and wood waste solids)
Liquid Renewable (Biomass) Fuels		OBL	Other Biomass Liquids (specify in comment section)
		SLW	Sludge Waste
		BLQ	Black Liquor
		WDL	Wood Waste Liquids excluding Black Liquor (including red liquor, sludge wood, spent sulfite liquor, and other wood-based liquids)
Gaseous Renewable (Biomass Fuel)		LFG	Landfill Gas
		OBG	Other Biomass Gas (including digester gas, methane, and other biomass gases; specify in comments section)
All Other Renewable Fuels		SUN	Solar
		WND	Wind
		GEO	Geothermal
		WAT	Water at a Conventional; Hydroelectric Turbine, and water used in Wave Buoy Hydrokinetic Technology, Current Hydrokinetic Technology, and Tidal Hydrokinetic Technology
All Other Fuels		All Other Energy Sources	WAT
	NUC		Nuclear (including Uranium, Plutonium, and Thorium)
	PUR		Purchased Steam
	WH		Waste heat not directly attributed to a fuel source (WH should only be reported where the fuel source for the waste heat is

			undetermined, and for combined cycle steam turbines that do not have supplemental firing.)
		TDF	Tire-derived Fuels
		MWH	Electricity used for energy storage
		OTH	Other (specify in comment section)
		UKN	Unknown (specify in comment section)

Appendix II: List of Entities

Acciona, Inc - GO
American Electric Power - LRE
Apex Clean Energy - GO
Arkansas Electric Cooperative Corporation - LRE
Basin Electric Power Cooperative - LRE
Berkshire Hathaway Energy Renewables - GO
Borger Energy Associates - GO
BP Alternative Energy - GO
Carthage Water And Electric Plant - LRE
Central Nebraska Public P&I District - GO
City of Chanute - LRE
China Creative Wind Energy - GO
City of Fremont - LRE
City of Malden Board of Public Works - LRE
City of Piggot, AR Municipal Light Water and Sewer - LRE
City of Poplar Bluff Municipal Utilities - LRE
City of West Plains Board of Public Works - LRE
City Utilities of Springfield - LRE
Coffeyville Municipal Power & Light - GO
D.E. Shaw & Co. - GO
DeWind Company - GO
Dogwood Energy LLC - GO
Duke Energy Renewables - GO
Eastman Cogeneration - GO
EDF Renewable Energy - GO
EDP Renewables North America - GO
Kansas Municipal Energy Agency (EMP1) - LRE
Kansas Municipal Energy Agency (EMP2_X) - LRE
Kansas Municipal Energy Agency (EMP3_X) – LRE
Kansas Municipal Energy Agency (EUDORA) - LRE
Kansas Municipal Energy Agency (Meade) – LRE
Kansas Municipal Energy Agency (GC) - LRE
Empire District Electric Company - LRE
Enel Green Power North America, Inc - GO
ETEC/NTEC/Tex-La - GO
Kansas Municipal Energy Agency (EUDORA) - LRE
Exelon Generation - GO
Falls City Utilities - LRE
Gateway - LRE
Gestamp Wind - GO
Golden Spread Electric Cooperative - LRE
Grand Island Utilities - LRE
Grand River Dam Authority - LRE
Greater Missouri Operations (KCP&L) - LRE
Green Country Operating Services - GO

Southwest Power Pool, Inc.

Harlan Municipal Utilities - LRE
Hastings Utilities - LRE
Heartland Consumers Power District - LRE
Independence Power & Light - LRE
Infigen Energy - GO
Invenergy - GO
Kansas City Board of Public Utilities - LRE
Kansas City Power & Light - LRE
Kansas Electric Power Cooperative Inc - GO
Kansas Municipal Energy Agency - GO
Kansas Power Pool - LRE
Kennett Board of Public Works - LRE
Lea Power Partners, LLC - GO
Lincoln Electric System - LRE
Lubbock Power & Light - GO
MidAmerican Energy Company - LRE
Midwest Energy - LRE
Missouri Joint Electric Municipal Utility Commission - LRE
Missouri River Energy Services - LRE
Municipal Energy Agency of Nebraska - LRE
Nebraska City Utilities - LRE
Nebraska Public Power District - LRE
Neligh - LRE
NextEra Energy - GO
NJR Clean Energy Ventures - GO
Noble Great Plains Windpark, LLC - GO
North Iowa Municipal Electric Cooperative Association - LRE
NorthWestern Energy Corporation - LRE
NRG Renewable, LLC - GO
NSP Energy Marketing - LRE
Oak Grove Power Producers LFG - GO
Oklahoma Gas and Electric - LRE
Oklahoma Municipal Power Authority - LRE
Omaha Public Power District - LRE
Oneta Power, LLC - GO
Orion Engineered Carbon - GO
Otter Tail Power Company - LRE
Pantex - GO
Paragould Light and Water Commission - LRE
Pattern Energy - GO
Peoples Electric Cooperative - LRE
Sany Electric - GO
Sid Richardson Carbon & Energy Co - GO
Southern Company - GO
South Sioux City, Nebraska - LRE
Southwestern Power Administration - LRE
Southwestern Public Service Company - LRE
Stillwater Electric Utility - GO

Southwest Power Pool, Inc.

SunEdison, LLC - GO

Sunflower Electric Power Corporation - LRE

Suzlon Wind Energy Corp - GO

Valero Energy Corporation - GO

Westar Energy - LRE

Western Area Power Administration - LRE

Western Farmers Electric Cooperative - LRE