

Initial Meeting of the South Joint Board for Economic Dispatch

Economic Dispatch In The South

November 13, 2005



Williams Power Company, Inc.

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SUMMARY

Security constrained¹ economic dispatch is an important issue to stakeholders in the electric utility industry and to every citizen in the region. Sound, fundamental economic dispatch is the cornerstone of producing energy and ancillary services² in the most efficient and effective manner. Overlaying security constraints on the economic dispatch ensures that the appropriate reliability considerations are incorporated into the decisions on operating generating units. Effective security constrained economic dispatch maximizes use of available transmission system capability while abiding by prudent reliability practices and minimizing the cost to produce energy. Effective security constrained economic dispatch also minimizes the use of valuable natural resources such as water, air and fuel.

BACKGROUND

Williams Power Company (“Williams”) is one of the major load serving entities in Georgia. Williams supplies capacity, energy and ancillary services to four electric membership corporations in Georgia through a long term, full requirements contract. In total Williams presently supplies 600 MW of capacity and will supply approximately 1,500 MW by the end of the contract in 2015. Williams’ interests in economic dispatch in the South are aligned with the interests of commercial and residential customers in the region. A robust, competitive and transparent wholesale market will reduce prices to Williams, to Williams’ customers, and to all other customers in the region.

WILLIAMS EXPERIENCE IN THE SOUTH

In the portion of the South where Williams has its largest area of operation, economic dispatch is performed individually by each load serving entity. Williams performs its own operational planning function to support its obligation to serve load in the region. As part of that function, Williams’ performs a load forecast and from that forecast Williams determines its net system requirements.³

Williams meets the net system requirements for its load obligations by scheduling the least cost set of available resources subject to the ability to schedule transmission service from the resources to

¹ Regarding economic dispatch security constraints generally refer to those conditions that must be applied to the economic dispatch process to ensure that reliability of service to customers is paramount.

² Ancillary services are voltage support, frequency regulation, energy balancing, spinning reserves, and supplemental reserves.

³ Net system requirements are the capacity, energy and ancillary service requirements of the control area.

the load. In performing this function, Williams must consider the cost and operational characteristics of each resource and the ability to obtain and retain transmission service to deliver each resource to load. Williams then establishes an operational plan for that operating day. This operational plan identifies what resources will operate during each hour and the expected level of production from each operating resource.

The operational plan includes resources in the local area along with any supplemental resources available through bilateral contracts. The ability to include resources from a broader portion of the region is hampered by inefficient and non-transparent congestion management practices of the transmission providers in the region.⁴

THE ISSUE: RESOURCE ALLOCATION

There are two separate questions that deserve some attention. The first question is: can Williams include all of its resources into its own operational planning and economic dispatch function. The answer to this question is generally no. Williams can only include those resources for which it has firm transmission service reserved. Williams has a significant asset in Alabama that is often operated at a rather inefficient operating point because of the unavailability of transmission service yet there is an overwhelming lack of information in NERC's TLR logs to support a lack of available transmission capability during real-time operation.⁵ Williams has been unable to secure additional firm transmission because of the alleged insufficient transmission capability.

The second question is: can all resources be incorporated into economic dispatch function for the entire region. The answer to this question is not at this time. There is a crippling lack of independence and transparency in administering transmission tariffs in the region. This lack of independence and transparency unnecessarily quashes stakeholder confidence in a region-wide outcome. Including all resources within each transmission provider's footprint and in a broader region into a single economic dispatch would be very beneficial to customers in the entire region. Doing so on an independent basis would result in the most efficient use of fuels thereby presenting the opportunity to minimize the fuel cost components of customers' bills and to contribute to our

⁴ Certain transmission providers have adopted a practice of curtailing transmission service based on internal transmission loading relief ("TLR") events. The distinguishing difference between a NERC TLR event and an internal TLR event is the transmission provider is not required to publish any information about internal TLR events.

⁵ Southern Company has reported two TLR events since January 1, 2000. The duration of one event was two hours and the duration of the other event was one hour.

nation's objectives to conserve fuels. It would also require the minimum use of environmental resources thereby contributing to clean air and water initiatives throughout the region.

THE SOLUTION I: CONGESTION MANAGEMENT

Effective congestion management is integral to the security constrained economic dispatch. It is incumbent upon load serving entities to have the appropriate level of resources at the right location to meet the needs of their customers. The load serving entities also have an obligation to prepare and remain prepared to respond to unanticipated events that challenge their ability to maintain uninterrupted service to their customers. Load serving entities provide certain amount of spinning reserves and non-spinning reserves to ensure adequate generating capacity is available to meet changes in load or changes in available generation. Likewise, load serving entities need to remain prepared to respond to changes in the availability of transmission capability. This is accomplished by providing generating capacity and reserves in certain locations to keep transmission systems loaded to acceptable levels that allow for emergency responses.

The current congestion management practices in the region stifle the ability of load serving entities to determine what resources should operate and to minimize the consumption of fuel in meeting their net system requirements. The lack of transparency in the identification of congestion and in the identification of remedial actions taken in the presence of congestion clouds the ability of load serving entities to anticipate when resources might be constrained by congestion. The lack of published business rules along with published interpretations prevent load serving entities from understanding what responses might be necessary when congestion is encountered. This uncertainty is a substantial risk to load serving entities that results in less efficient operation at increased costs to all consumers.

THE SOLUTION II: INDEPENDENCE

Likewise, administration of open access transmission tariffs by independent organizations will substantially improve the economic dispatch process. Independent organizations will bring transparency: (1) to the process through published business rules and interpretations and (2) to the outcome through published curtailment events. An independent administrator will not favor the resources of the transmission owner over those of other stakeholders. An independent administrator will utilize the most efficient resources available regardless of ownership. In the end

the independent administration will bring lower prices to customers with the benefits fairly allocated among the different customers in the region.

WHAT ABOUT COST

The cost to operate each resource is a significant factor in determining what resources to operate. While Williams has to consider the normal and customary costs for fuel and variable operation and maintenance when deciding to operate a resource, Williams often has to consider the cost of compliance with onerous provisions of the transmission providers' open access transmission tariffs or its energy imbalance agreements. An example of this can be found in the Interconnection and Operating Agreement between CLECO Power LLC and CLECO Evangeline, LLC.^{6,7} The rate provisions of this agreement are patently unfair and unjustifiable. For energy deliveries above the one and one-half (1.5) percent bandwidth, CLECO Power, LLC offers no compensation for the amount of delivered energy greater than one and one-half percent of the scheduled amount.⁸ Yet, CLECO Power, LLC charges 110 percent of its system's incremental cost for energy imbalances below ninety-eight and one-half (98.5) percent of the scheduled amount. While CLECO may charge its own rate-based units using these same guidelines when they incur such imbalances, it is not clear that merchant generators compete on a level-playing field when unaffiliated merchant generator costs are compared to those of the transmission-owning utilities in making dispatch decisions.

If one considers the implications of this provision in the context of starting an F-class gas turbine, the unreasonable nature of this provision becomes apparent. If the gas turbine is started to achieve 100 percent load by the top of the hour and it increases load at five (5) megawatts per minute from synchronizing to full load, one would expect to produce about fifty-three (53) megawatt-hours in the hour during start-up. However, if the gas turbine is started one minute too early, the unit produces about three megawatt-hours more than anticipated. Based on CLECO Power, LLC's generator imbalance schedule, the generator would not be paid for the over-production of energy, resulting in an additional \$200 in cost to start the unit. Adding additional costs to the start of a given unit has the potential to cause a less efficient unit to operate in place of

⁶ Interconnection Agreement filed in FERC Docket ER00-766.

⁷ Williams Power Company, Inc. has a long term agreement to purchase the capacity, energy and ancillary services from CLECO Evangeline, LLC. That agreement was filed with the FERC in FERC Docket ER00-3058.

⁸ Interconnection Agreement, Original Sheet No. 34.

a more efficient but unreasonably burdened unit. Outcomes such as these are adverse to the goal of energy efficiency.

Current energy imbalance mechanisms must be set aside, modified, or at least applied in exactly the same manner for both utility-owned rate-based units and those of competitive merchant generators. All transmission providers must publish an hourly rate for energy and each ancillary service during real-time operation and based on that operation that all imbalances of energy or ancillary services are settled. Furthermore, each transmission customer must be given a genuine opportunity to self supply any ancillary service required by the transmission provider.

SPECIFIC RECOMMENDATIONS

1) The Federal Energy Regulatory Commission should continue to encourage RTO or RTO-like structures. Either through legislation or regulation, the federal government should require security-constrained economic dispatch of all generation interconnected to transmission systems regardless of ownership. Federal regulators should conduct periodic audits to insure business rules and practices remain appropriate and to ensure compliance with the rules and the directive. Each control area operator and/or transmission provider should have an obligation within the pro forma open access transmission tariff to utilize the lowest cost and most environmentally efficient resources within its control area to meet the net system requirements of the control area regardless of ownership.

2) The Federal Energy Regulatory Commission should establish standardized practices, procedures, definitions and interpretations for management of an open access transmission tariff so that: (1) the management of the tariff is clear and transparent to all transmission customers, (2) security constrained economic dispatch can be implemented region-wide in a non-discriminatory manner that engenders confidence in the results, and (3) load serving entities have sufficient information to anticipate potential problems, verify the existence of problems, and employ the most cost-effective solutions to those problems.

3) The Federal Energy Regulatory Commission should establish standardized business rules, including active supervision in areas not utilizing independent operators, for the provision of transmission services, capacity and energy supply, and ancillary services within the pro forma open access transmission tariff to facilitate security constrained economic dispatch.

ABOUT WILLIAMS AND THE AUTHOR

Williams Power Company, Inc. is an energy services provider that buys, sells, and transports a full suite of energy and energy-related commodities, including power, natural gas, primarily on a wholesale level. Williams Power Company's portfolio consists of approximately 7,500 megawatts of capacity owned, managed or under long-term contract within five of the ten North American Electric Reliability Council (NERC) regions including positions in Alabama and Louisiana. Williams supplies capacity, energy and ancillary services to many of the electric membership corporations in the state of Georgia through several long-term power supply agreements. The Company's largest position is in southern California, where Williams supplies approximately 4,000 MW of energy and various ancillary and other reliability services to meet the region's electricity needs...

Robert O'Connell is a Manager of Regional Government Affairs Power for Williams. In prior assignments his responsibilities included direction of engineering, dispatch and operational functions for Williams Power Company's contractual and physical assets, including operational management of Williams Power Company's load serving responsibilities for the some of the electric membership corporations in Georgia and its generation positions in Alabama and Louisiana. Of his 22 years of experience in the electric power industry, Mr. O'Connell has 13 years of experience in transmission system planning and power system operation functions for an investor-owned utility. Mr. O'Connell has a Bachelor of Science Degree and a Master of Science Degree in Electrical Engineering from Drexel University and he is registered as a professional engineer in the Commonwealth of Pennsylvania.