

Tacoma Power Vista

Client:
Tacoma Power

Location:
Tacoma, Washington,
U.S.A

Project Year:
2005



Customer Environment

Tacoma Power's resource portfolio is comprised of both generating and contractual resources. The primary function of the resource portfolio is to serve Tacoma Power's load. Surplus generation is sold into the wholesale power market in the Pacific Northwest and Southwest markets. The export and import of energy is structured into a portfolio of bi-lateral transactions ranging from long-term contracts (monthly to multi-year), short-term sales and purchases (day ahead to monthly), and real-time sales and purchases (next hour and balance of the day).

Tacoma Power owns and operates four hydroelectric projects (Cowlitz, Cushman, Nisqually and Wynoochie) with a total capacity of approximately 713 MW.

Cowlitz River Project

- The largest of Tacoma Power's hydroelectric projects consisting of two coordinated hydroelectric power plants on the Cowlitz River, Mossyrock and Mayfield
- Mossyrock and Mayfield combine to generate approximately 462 MW

Cushman River Project

- Consists of two coordinated hydroelectric power plants on the North Fork of the Skokomish River, Cushman No. 1 and Cushman No. 2
- Cushman No. 1 and Cushman No. 2 combine to generate approximately 124 MW

Nisqually River Project

- Consists of 2 coordinated hydroelectric power plants on the Nisqually River, Alder and La Grande
- Alder and La Grande combine to generate approximately 114 MW

Wynoochie River Project

- Consists of one hydroelectric power plant on the Wynoochie River with a capacity of approximately 12.8 MW

Seasonal reservoir storage supplements current river flows for the Cowlitz, Skokomish and Nisqually Rivers.

Tacoma Power's contractual resources include the following:

Bonneville Power Administration Contract

- Approximately 390aMW
- Amount delivered to Tacoma Power varies by month
- Tacoma Power has the ability to shape this contract to help meet load
- Specific provisions in the contract allow for different amounts of power to be delivered in on-peak and off-peak hours each with different shaping rules

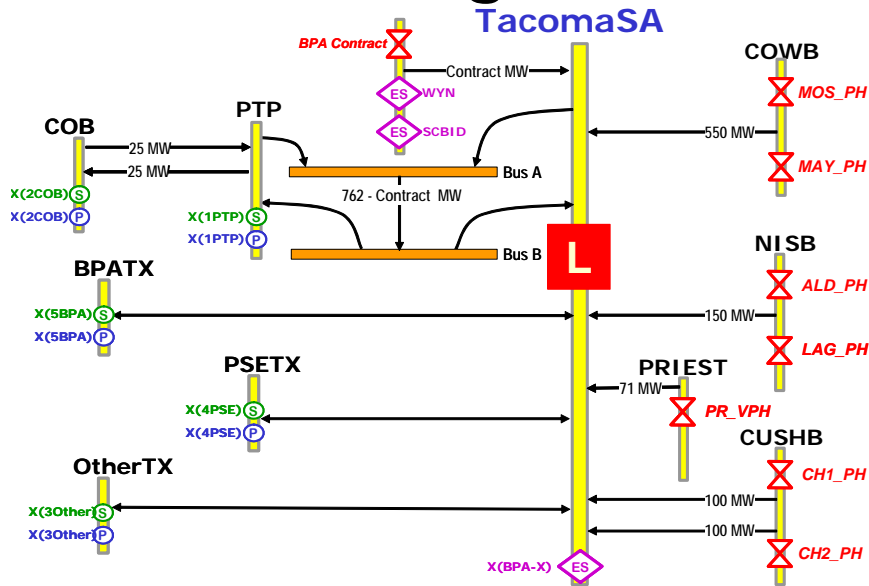


Priest Rapids Hydroelectric Project – Take-Or-Pay Contract

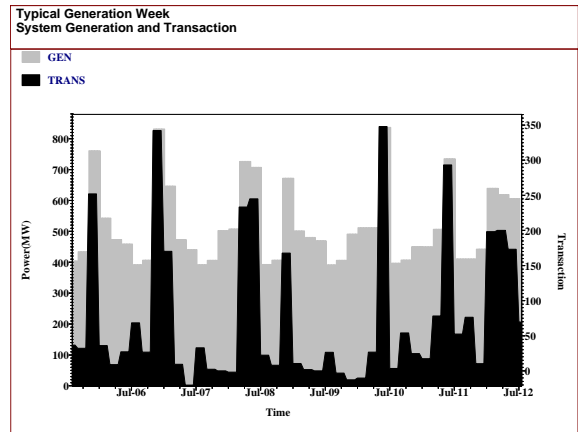
- Tacoma Power receives on a take-or-pay basis approximately 8% of the production of the Priest Rapids Hydroelectric Project which is owned and operated by Grant County PUD
- Forecasted 3 year total generation from this contract is approximately 343,000 MWh

Tacoma Power has transmission abilities (both owned and contractual rights) that allow transactions at the Mid-Columbia, California-Oregon border and other northwest points. A simplified schematic of the actual grid is illustrated in the following diagram.

Bus Configuration



Generation and transaction results for a typical week



Call Us to Learn More

Tel: 905-357-6973

E-Mail: vista@synexusglobal.com

Challenge

A primary responsibility of Tacoma Power's power management section is optimization of the utility's power-supply portfolio. Job functions within the section include long-term strategic planning and analysis functions as well as operation of the utility's power-supply assets on a long-term, medium to long-term basis.

Analyses and decisions were facilitated with the use of various computer-based tools in combination with the professional judgment of staff. Tacoma Power is seeking to replace some or all of these tools with a consistent, user-friendly, flexible decision support system, which is rooted in mathematical optimization.

Solution

In late 2005, Tacoma Power contracted Synexus Global to implement the *Vista* Decision Support System. *Vista* will allow the Power Management Section to monitor real-time operations, and to optimize the use of the hydro generation resources, as well as assist in decision making for long-term strategic planning.

Vista provides generation target schedules for the next 7 days based upon forecast demand, hydraulic and market conditions.

Due to transmission constraints, important characteristics of the transmission system were represented in *Vista*

- dynamic reserve requirements as a function of real-time hydro generation
- bi-directional line limits
- tie-line limitation as a function of line loading.

Client Benefits

Vista is used as a decision support tool to optimize weekly operations and adjust decisions as required by real-time conditions, thereby taking advantage of various transaction opportunities.

Call Us to Learn More

Tel: 905-357-6973

E-Mail: vista@synexusglobal.com

