General

In the early 60's, the age of automation was upon the company and the process of replacing power house operators began. By 1966 the Dubay, Stevens Point and Biron hydro plants were under a new remote control system. The Dispatcher and Operators at the Wisconsin Rapids hydro plant could start and stop the generators, read the head water elevations on demand and read the kilowatt hour meters for all three plants remotely. People were shifted to other jobs and attrition through retirement was used to eliminate the old power house operator positions. The system used to control the dams was purchased from Westinghouse and called REDAC.[54] The installations were done by Consolidated people. The system was used until 1988, long after being replaced by a state of the art computer system. Since the REDAC used separate phone lines, it came in handy several times when the computer crashed or the line for the computer was out. After the installation of a much more reliable computer system in 1988, the REDAC was removed.

In the late 70's the electrical power market in central wisconsin had changed. The Power Company could no longer supply the city of Wisconsin Rapids and Consolidated Papers Inc. both with power. The old way of transferring "dump" power between utilities was a thing of the past and a new time of day contract was entered into between CWP and Wisconsin Public Service Corporation. These contracts are under the jurisdiction of the Federal Energy Regulatory Commission. To properly implement this contract, a Leeds and Northrup mini-computer system was purchased and installed to not only control the transmission system, but also the hydro plants. The SCADA[55] system also allowed the Dispatcher to see how much energy the various mills were using, how much electrical energy from hydro and steam was being generated and how much power was being purchased from WPS for any given moment of the day. This was a major step forward in implementing the power contract and gave the Dispatcher and Power company management insight into how the power grid operated as never before. The system paid for itself in a few months.

About 1985, it was realized that the L&N mini-computer was obsolete, cumbersome to program and impossible to expand. Some off-line studies had been done on a desk top computer, but no exchange of data was possible between the two systems. Power company management began to look for a new system. Replacements from vendors were extremely expensive and geared toward large utilities. CWPCo was ahead of technology to a degree. After a faulty start, a new SCADA system was built by in-house people. Hardware was limited, but creative people put together a system from IBM Personal Computers, programmed them and made it work. This new system

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[54] REmote Data Acquisition and Control

[55] Supervisory Control And Data Acquisition

allowed a person to create, modify or delete computer screens in minutes without knowing how to program; whereas the L&N needed a skilled programmer who might take hours or days to make some changes. Another feature of the IBM was remote connections. This allowed management, engineering or maintenance people to remotely connect to the SCADA system and monitor (but not change) what was happening on the river or power grid. This has been a major time saver during floods and outages. On the IBM system, math functions were available to make computations fairly easy. The catch was that eventually only one person could make it work if it failed. So, when it appeared that the IBM system was going to need a major expansion, it was decided to look outside the company again. Today, many vendors are making SCADA systems for small utilities and we could pick from several good makers. The new SCADA will take us into the next century with a system we can build on. The new computer, still built on the IBM platform, will allow expansion in to hi-res graphics, geographical information systems (GIS), automated mapping and facilities management (AM/FM), energy management systems (EMS), automatic generation control (AGS) and other enhancements in the future. Much of the current manual bookkeeping for the power company can be done on-line with real time data.